

# MICROTIMES

## NEW NeXT MACHINES:

"The new systems managed to get the microcomputer press to talk about a market that seems almost invisible, even though it is still growing rapidly: low-end UNIX machines."

See page 14

"What do the NeXT machines mean to Apple? Apple is in the same place as IBM was in 1984—no one will get fired for buying a Macintosh in today's market. It's a daring move to go 'non-standard' with the NeXT best thing."

See page 182

"Along with Apple, DEC, and Sun, NeXT is poised to offer LAN solutions to the printing industry. All of these companies have more than a passing interest in networking. NeXT builds Ethernet, network support, and electronic mail into all of its machines."

See page 86

## LIVE FROM CHAOS MANOR

*At Home With Jerry Pournelle*

"I get static from people saying, 'You know, you're writing about this stuff we can't afford.' Two years from now you will be able to afford it. Three years from now you won't know how you lived without it."

See story on page 96



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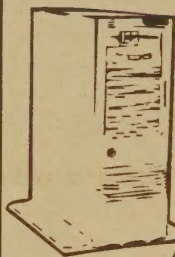


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## Vectra 486 EISA



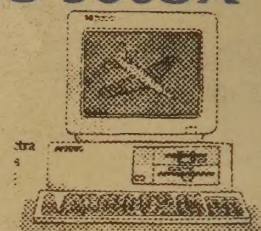
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80386SX**

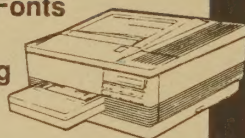
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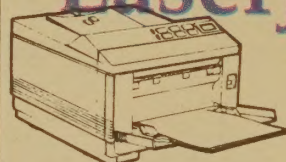
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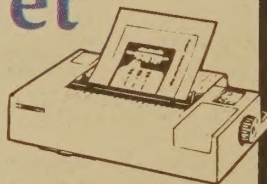
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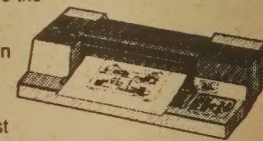


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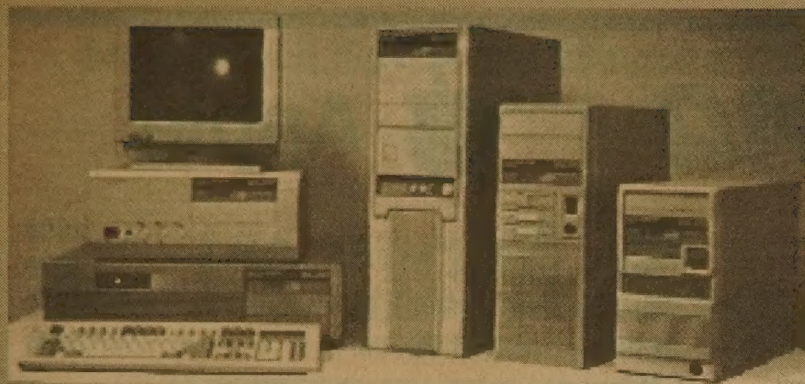


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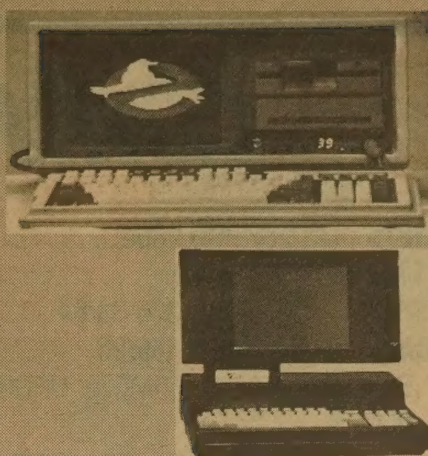
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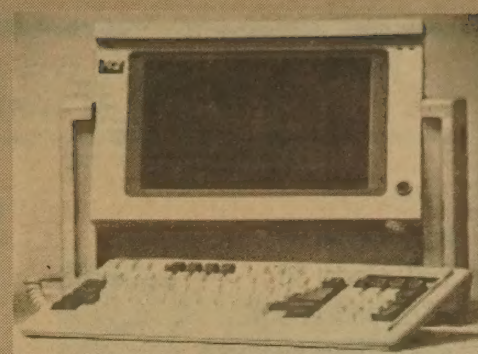


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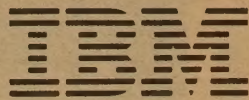
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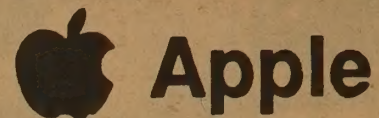
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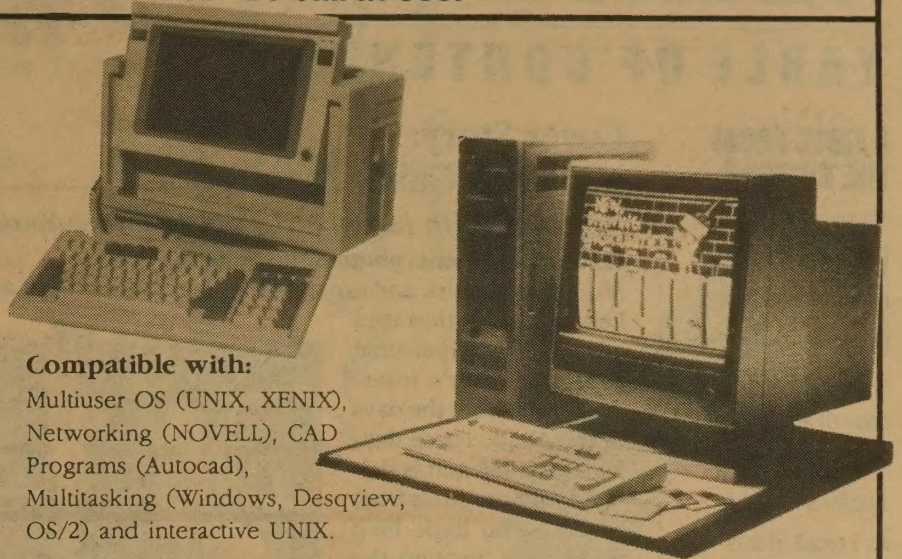
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133 MHz

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# ADVANCE

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### A NOTE FROM THE EDITORS:

Many years ago, before computers had become a presence in my life, a friend of mine lent me his copy of a science fiction book called *Lucifer's Hammer*. As I recall, it was about a comet falling in the ocean, with profound social and ecological effects. Its authors were these two guys from LA, Jerry Pournelle and Larry Niven.

Well, Niven and Pournelle have been writing those sci-fi books for some time now. And, as I've come to learn, Pournelle (who will be the first to tell you so), was among the earliest to perceive and discuss the fact that those computers people were putting together in garages at about the time I was reading *Lucifer's Hammer* were going to have an impact on the world as significant as any comet.

It's 1990. The computers have been around for a while. For the latest on what Pournelle thinks of it all, see our cover story which begins on page 96.—ME

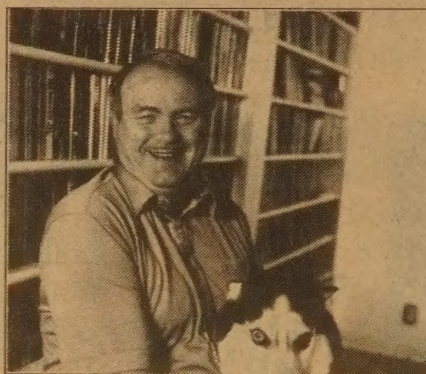
### Cover Story:

#### A Visit To Chaos Manor.....96

*At Home With Jerry Pournelle* By Wayne A. Yacco

Cover and contents photos: Ann Summa

Author, columnist, and expert, Jerry Pournelle has been an outspoken and opinionated advocate of the personal computer user's interests since about the days of the Altair. These days he uses a 486 and is deluged with products from readers who hope he'll make their creation the next dBASE. Wayne Yacco takes tape recorder in hand and pays a visit to Pournelle in his Southern California home to see what's new.



## BUSINESS SOLUTIONS

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Some time has passed since CD-ROMs were touted as the panacea for the mass storage and information retrieval needs of business. Like most panaceas, this one didn't quite live up to its billing, but CD-ROM has established itself as a viable and useful technology, particularly within specific niches

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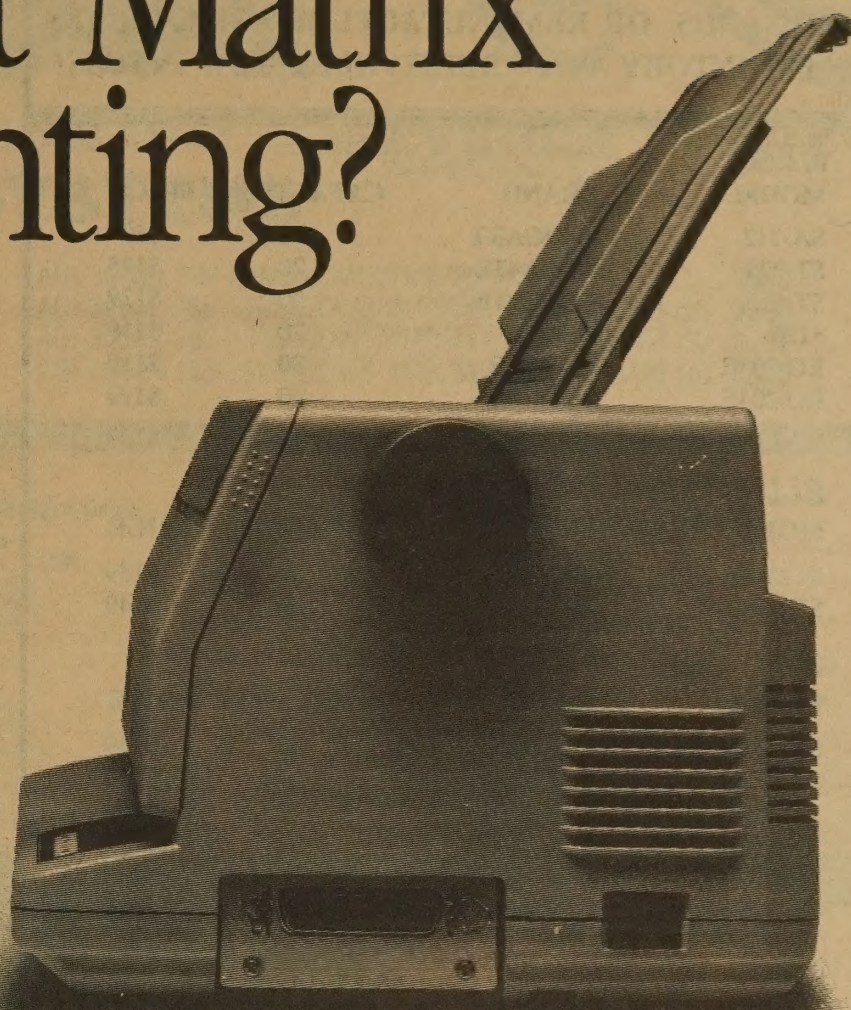
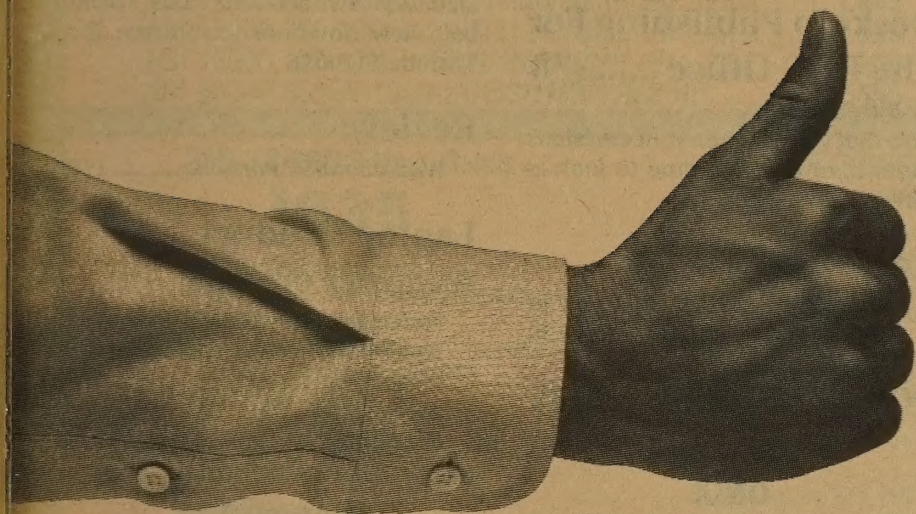
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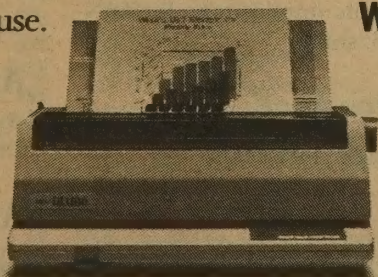


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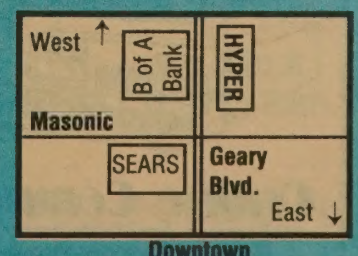
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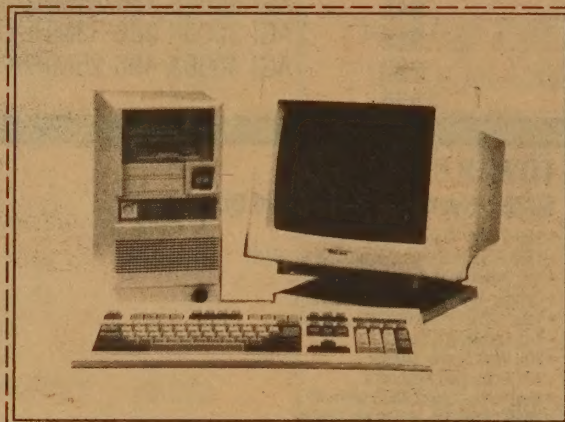
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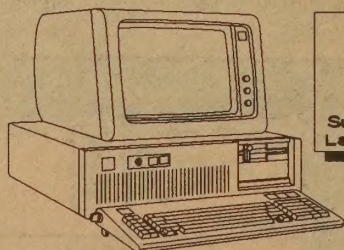
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- Conner 104MB H/D, 25MS

**\$2145**

- Megatran 170MB H/D, 16MS

**\$2445**



## MT-2580

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- 14" Hi-Res VGA Monitor (1024x768)
- 16 Bit, 512k VGA Card

- NEC 66MB H/D, 25MS

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- Conner 104MB H/D, 25MS

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- Megatran 170MB H/D, 16MS

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1984-Introduced our X'Golden Turbo XT motherboard, producing 200,000 units.

1985-Introduced our 286 AT motherboard to reach new markets.

1986-Opened our first U.S. sales office in San Jose, CA under the MICRILINK systems logo.

1987-Introduced our 386 25 MHz AT motherboard. Opened our second sales office in San Francisco.

1988-Our production of motherboards peaked above 500,000 units.

1989-Introduced our 386 33 MHz w/64k cache motherboard. We began mass production of a new 486 25 MHz motherboard.

1990-Relocated our San Jose warehouse

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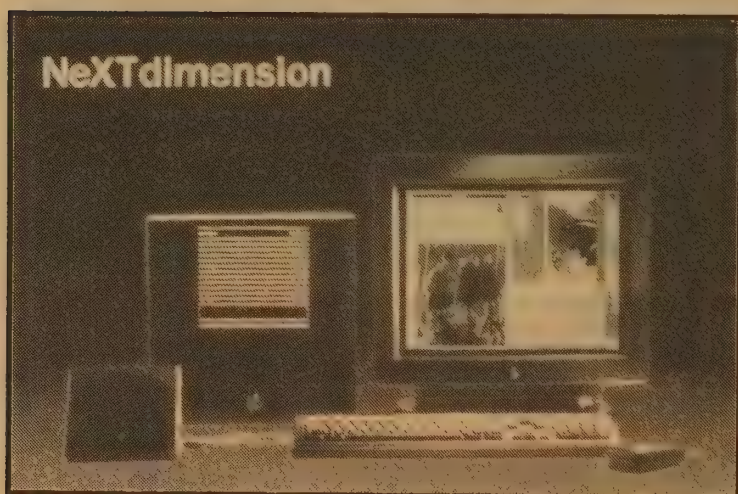


## INDUSTRY INSIGHT

BY PAUL  
HOFFMAN

### NEXT ANNOUNCES NEW PRODUCTS, BRINGS UNIX INDUSTRY NEW ATTENTION

You can never guarantee that the publicity you get is the publicity you want, but Steve Jobs should be incredibly happy with the



New NeXT machines offer improved speed, color capability, and impressive applications.



Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman@well) and MCI Mail (264-3171). He also writes popular microcomputer books.

press response to the announcement of his new systems last month. The presentation of the new system got rave reviews from most observers, although most financial analysts said that they were too little and too late to make much of a difference.

The new systems, much less expensive and much faster than the ones announced two years ago, at least managed to get the microcomputer press to talk about a market that seems almost invisible, even though it is still growing rapidly: low-end UNIX machines. For that, most of Jobs's competitors thank him.

NeXT did a great job clearing some of the myths about the computer, such as that there was no software for it. At the introduction two years ago, lots of big-name companies promised to write software for the machine but never did. This left many people with the

impression that there was no software for it. At this introduction, NeXT handed out fat catalogs of software, much of it already shipping. There's a surprising amount of niche business software such as medical and engineering packages.

One thing that wasn't discussed publicly during the announcement was the Cube's abysmal sales over its first two years. Fewer than ten thousand NeXT systems have been sold, giving NeXT one of the lowest sales-to-hype ratios in the universe. Conversely, it gives them one of the highest software-to-sales ratios.

**NeXTstation:** The newly announced machines are much smaller than the previous NeXT cubes and cost much less. For \$5,000, the NeXTstation comes with a Motorola 68040 CPU, large grayscale display, 105Mb hard drive, 2.8Mb floppy drive, and 8Mb of RAM. The price also includes the operating system (including Display PostScript), development tools, and many applications, such as word processing and electronic mail. The system is upgradeable to include more RAM or a larger hard disk.

NeXT also dropped the list price of its NeXTcube to \$8,000 and the price on its laser printer to \$1,800. The few people who bought the NeXT cube before the announcement can upgrade for \$1,500.

**Color:** NeXT also announced color options for the NeXTstation and NeXTcube. The upgrade for the NeXTcube offers sixteen million colors at a resolution of 1120 x 832 pixels and costs \$4,000. A color NeXTstation, which offers 4096 colors, costs \$8,000. The color is driven by the same Display PostScript engine as the monochrome systems, so that all software will run as well in color as in black and white.

**CPU Problems at Motorola:** Unfortu-

With Lotus Improv, you don't have to copy the formulas around the rows and columns and you don't have to use cell addresses. These two features make creating a worksheet much, much easier.



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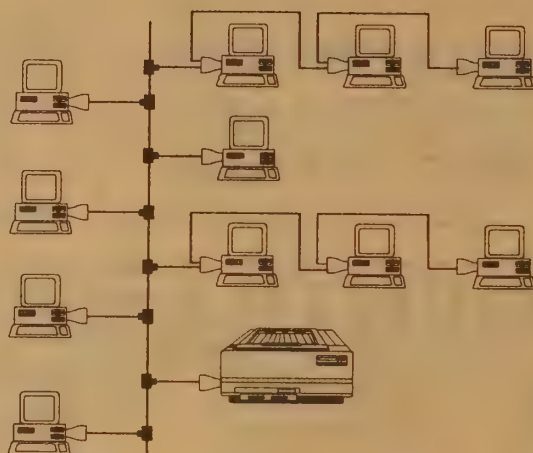
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## NEWS & VIEWS

nately for NeXT, the 68040 is not shipping in quantity since Motorola keeps finding bugs in the chip. As of this writing, Motorola was very sure that the next set of chips would be the last test



The color is driven by  
the same Display  
PostScript engine as  
the monochrome  
systems, so that all  
software will run as  
well in color as in  
black and white.

before full production. Even if that is the case, they cannot ship in quantity until December or January, and another round of bugs would push that date off until February or March.

At the announcement, Jobs claimed standing orders for fifteen thousand new machines and readiness to ship them in November 1990. Various analysts expressed skepticism on this point—NeXT will be one of the first companies to receive large batches of chips, but they must still assemble them into units, test them, and ship them.

**Applications:** Many software and add-on hardware vendors were at the introduction to show their new wares for the system. Lotus got the most praise for its new Improv spreadsheet.

Improv is slightly more restricted than other spreadsheets in that the formulas can only reside in the first row and column but it turns out that the





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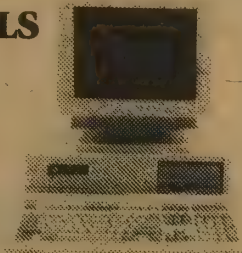
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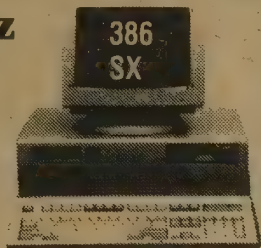
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- 1 MB RAM



w/14" Mono Monitor .....\$899  
w/14" VGA Monitor .....\$999

##### 386SX-16 MHz

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- 1 MB RAM
- Made in USA

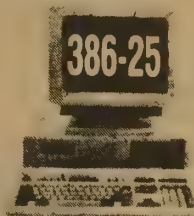


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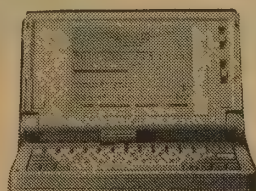


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- Made in USA



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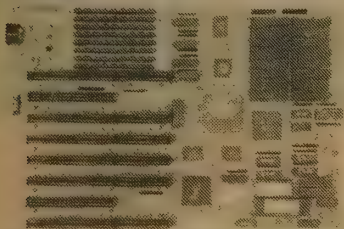
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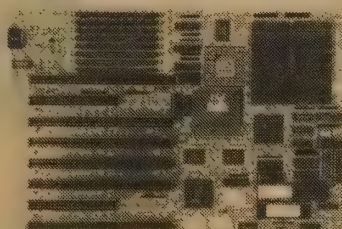
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##### 486-25/33 Cache



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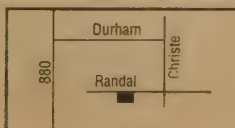
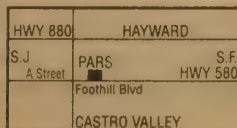
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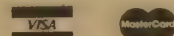


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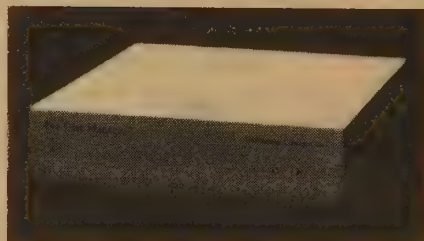
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## NEWS & VIEWS

vast majority of spreadsheets work exactly in that fashion. With Improv, you don't have to copy the formulas around the rows and columns and you don't have to use cell addresses. These two features make creating a worksheet much, much easier. Lotus and NeXT will give copies of Improv free to anyone who upgrades their NeXT or buys a system before the end of the year. After that, the package will cost \$700. It is very likely that Lotus will port Improv to other operating systems in the future.

**Future:** Many industry leaders stated after the announcements that NeXT was a viable company with an

**Companies who sell hardware and software that support UNIX on 80386 and 80486 PCs will now get noticed more, but so will their prices. For \$5,000, NeXT offers a system that could easily cost twice as much in the PC market**

interesting product that should make it in the micro market. Of course, having the huge cash cushion that Jobs acquired doesn't hurt when you can only sell a negligible number of systems in your first two years. Even if NeXT sells five times as many machines in the coming year as it did in the last two (and they will be lucky to do that), it will only have a tiny piece of the market.

However, NeXT's very vocal presence will certainly help other low-end UNIX manufacturers who have been unable to get people to notice that UNIX is a viable option over OS/2. Companies who sell hardware and software that support UNIX on 80386 and 80486 PCs will now get noticed more, but so will their prices. For \$5,000, you get a system that could easily cost twice as much in the PC



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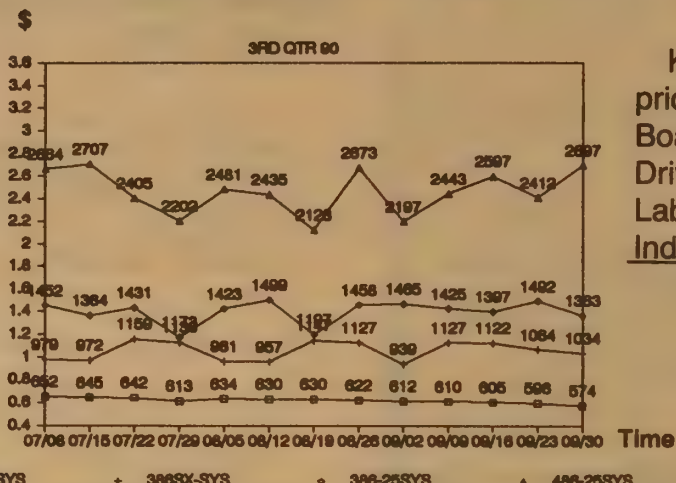
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## NEWS & VIEWS

market when you factor in the fast CPU, operating system, base software, and high-resolution monitor. The new NeXT systems may help drop the price of much of the PC UNIX software in order to keep competitive, even if NeXT holds only a small piece of the market.

### SUN MAKES IT CHEAPER, FASTER TO PRINT ON A PC/UNIX NETWORK

To get a printer to print PostScript output, you need a CPU and lots of

The announcement will interest companies that have many PCs hooked on a network with one or more Sun workstations, especially if they already have many non-PostScript printers.

RAM. Normally, the CPU and RAM reside in the printer, making it expensive. Unless you put a very fast CPU in the printer, you might only get a page or two a minute from it, since there is a great deal of calculation necessary.

Sun recently announced NeWS-Print, software that allows a SPARC computer to become the CPU for a "dumb" printer and turn it into a PostScript printer. Since most SPARC computers are many times more powerful than the CPUs in printers, using NeWS-Print gets you your output much faster. Since there is only one CPU and less RAM, a multi-printer system is much less expensive than buying many PostScript printers.

The announcement will interest companies that have many PCs hooked on a network with one or more Sun workstations, especially if they already have many non-PostScript printers. The NeWS-Print software, which only costs \$500, lets them turn all of the printers into PostScript



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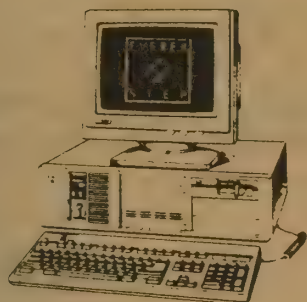
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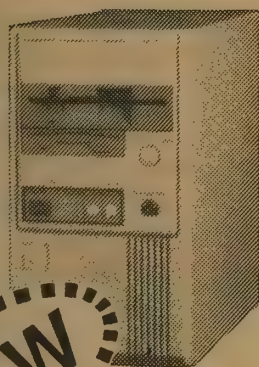
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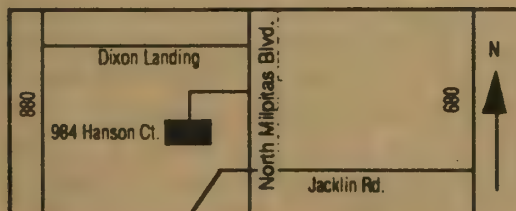
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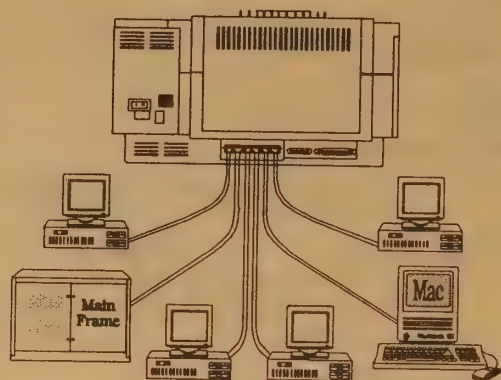
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## NEWS & VIEWS

printers that are much faster than standard \$4,000 PostScript printers.

Sun announced that NeWSPrint can drive a wide variety of popular printers, including dot-matrix printers, plotters, and color printers. It comes with fifty-seven scalable fonts in Sun's F3 format from many font houses such as Linotype and URW. All printers can be attached to the same SPARC system, making it a print spooler and server. If you don't have a laser printer, Sun also announced the \$2700 SPARCprinter, an inexpensive laser printer specifically designed to work with NeWS-Print. The SPARCprinter comes with NeWS-Print and a special interface card for the SPARC system.

If you have dozens of PCs, for example, you simply configure all of the software on them to print as if there was a locally attached PostScript printer. Most networking software is able to redirect that printed output to the SPARC system, and NeWSPrint takes it from there. Centralizing printers and print services also makes it easier for a network administrator to determine how many new printers are needed and when.

It should be noted that Sun was not the first company to market a PostScript printing system where a UNIX CPU does the work for a "dumb" printer. Two years ago, NeXT announced such a system during its initial product demonstration. Although NeXT's sales are miniscule by Sun's standards, NeXT was the first to demonstrate the financial advantages of using a powerful CPU to spew pixels out to the printer in order to make the printer cheaper and faster. NeWSPrint goes well beyond the NeXT solution by making SPARC systems compatible with virtually all popular printers and giving PCs on a network the capability of using them as PostScript printers.

## EARTH DAY SIX MONTHS LATER: WHO'S DOING WHAT

The world is still here, it is still messed up, but other crises have taken our attention away from what we can be doing to help. In the six months since Earth Day 1990, a few companies in the computer industry have started to clean up their acts. Many companies, at the insistence of their employees, have set up better recycling programs, especially for mixed paper such as printouts and catalogs. After setting up these recycling programs, many companies have reported that there is very strong support for them. In addition, paper-intensive companies have reduced their garbage collection bill substantially.

Two major companies have gone public with their environmental actions to help get other companies interested in taking positive steps. Other companies are now beginning to look at more than just recycling, and it is likely that we will see

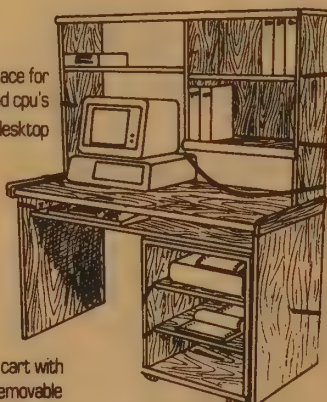
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## 386-33 MHZ 64K CACHE

LANDMARK=56

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LANDMARK=21

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LANDMARK=16

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| 1 MB VGA Card .....                      | 155  |
| ATI Wonder (1024x768) .....              | 199  |
| AT I/O (2S, 1P, 1G) .....                | 25   |
| 1:1 FDC/HDC (MFM) .....                  | 70   |
| DTC 7280 1:1 FDC/HDC .....               | 99   |
| DTC 7287 1:1 FDC/HDC (RLL) .....         | 109  |
| DTC 6280 ESDI .....                      | 145  |

### Modem

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|--------------------------------------|------|
| 1200 Baud (Int) .....                | \$60 |
| 2400 Baud (Int) .....                | 65   |
| Fax Modem (9600 Fax, 2400 Modem) ... | 160  |
| 2400 Baud (Ext) .....                | 110  |
| Zoltrix 2400 Modem .....             | 80   |

### FLOPPY DRIVE

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|--------------------------|------|
| Fujitsu 360K/1.2M .....  | \$55 |
| Teac 360K/1.2M .....     | 60   |
| Fujitsu 720K/1.44M ..... | 60   |
| Teac 720K/1.44M .....    | 65   |

### KEYBOARD

|                           |    |
|---------------------------|----|
| 101 Keys .....            | 33 |
| Keytronic 101 Keys .....  | 48 |
| BTC 101 Keys .....        | 39 |
| Lite On 101 Keys .....    | 39 |
| Fujitsu 101 Keys .....    | 45 |
| Track Ball Keyboard ..... | 99 |

### PRINTERS

|                           |     |
|---------------------------|-----|
| Panasonic KX-P1180 .....  | 160 |
| Panasonic KX-P1124 .....  | 270 |
| Panasonic KX-P 1624 ..... | 389 |

### CHIPS

|                   |           |
|-------------------|-----------|
| 80276-8/10 .....  | \$194/210 |
| 80387-20/25 ..... | 360/440   |
| 80386-25/33 ..... | 340/360   |
| 256K-8 .....      | 2         |
| 256Kx4 .....      | 21        |
| 1 MB-8 .....      | 5         |
| 1 MBx9 .....      | 55        |

### MOTHERBOARDS

|                                      |         |
|--------------------------------------|---------|
| DTK 8088 10 MHz .....                | \$68    |
| 286-16/12 MHz 0 Wait .....           | 169/110 |
| 386SX-16 MHz 0 Wait .....            | 320     |
| 386-20 MHz 0Wait (w/o CPU) .....     | 239     |
| 386-25 MHz 64K Cache (w/o CPU) ..... | 340     |
| 386-33 MHz 64K Cache (w/o CPU) ..... | 375     |
| Micronics 25 MHz (w/CPU) .....       | 1090    |
| Micronics 33 MHz (w/CPU) .....       | 1295    |
| LapTop Samsung .....                 | 1699    |
| 486-25 MHz 128K (w/CPU) .....        | 1799    |

### HARD DISK

|                                      |       |
|--------------------------------------|-------|
| ST-225 (20 MB) .....                 | \$185 |
| ST-238 (30 MB) .....                 | 230   |
| ST-251-1 (40 MB, 28ms) .....         | 245   |
| Toshiba 134FA (44/66 MB, 24ms) ..... | 330   |
| NEC 3142 (44/66 MB, 24ms) .....      | 330   |
| Conner 80 MB .....                   | 469   |
| Conner 100 MB .....                  | 495   |
| Conner 200 MB .....                  | 769   |
| Maxtor 4170E ESDI 150MB, 14ms .....  | 895   |
| Maxtor 4380E ESDI 320 MB, 16ms ....  | 1489  |
| Maxtor 8760E ESDI 660 MB, 16ms ....  | 2299  |
| CDC SCSI 150 MB 18ms .....           | 869   |
| Miniscribe 330 MB SCSI .....         | 1199  |
| Miniscribe 330MB ESDI .....          | 1199  |
| NEC 150 MB .....                     | 799   |

### MISCELLANEOUS

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| 150W (XT) Power Supply .....            | \$39 |
| 230W Power Supply .....                 | 48   |
| Logi Hi-Res Mouse .....                 | 70   |
| Logi Trackman Ser/Bus .....             | 80   |
| Baby AT Case (XT) .....                 | 45   |
| AT Full Size Case .....                 | 50   |
| Mini Vertical Case w/Power Supply ..... | 115  |
| Tower Case w/Power Supply .....         | 179  |

### MONITORS

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|---------------------------------|------|
| Hyundai Mono .....              | \$71 |
| 14" Flat Screen .....           | 95   |
| Color Monitor .....             | 199  |
| Hyundai EGA .....               | 300  |
| Hyundai VGA .....               | 270  |
| VGA Monitor .....               | 290  |
| Relisys Multisync .....         | 425  |
| NEC Multisync 2A .....          | 499  |
| NEC Multisync 3D .....          | 599  |
| Super VGA (1024x758) 0.28 ..... | 369  |

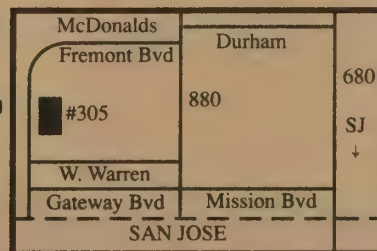
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| Scanman .....      | \$175 |

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| 2400 Int ..... | \$75  |
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| AAmazing 14" MONO Paper White .....           | \$105  |
| AAmazing 14" VGA Paper White .....            | \$135  |
| INTRA 14" VGA Paper White .....               | \$125  |
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| AAmazing 14" VGA (1024x768 .28mm) .....       | \$390  |
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| Color option .....                    | \$59  |
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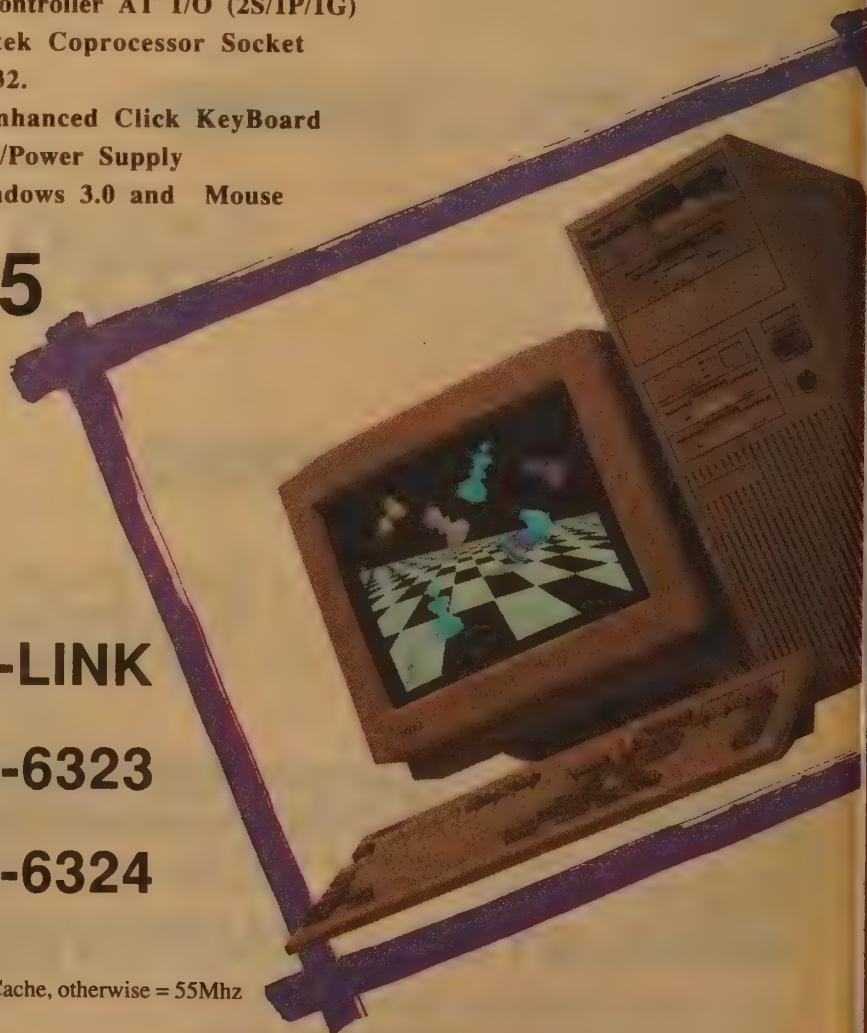
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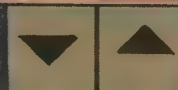
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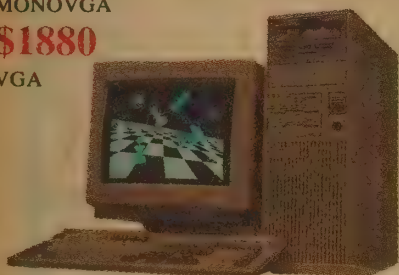
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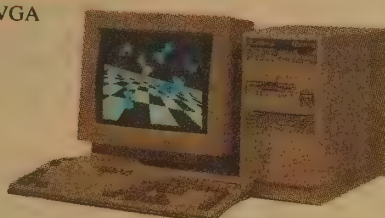
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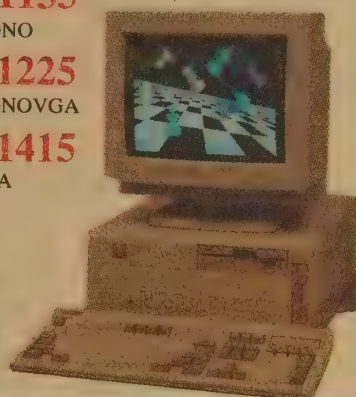
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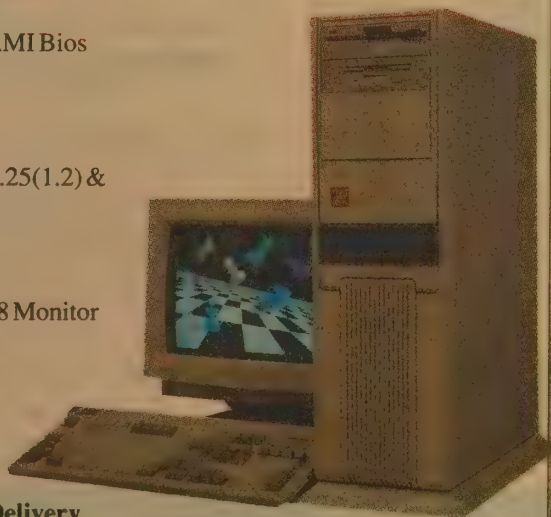
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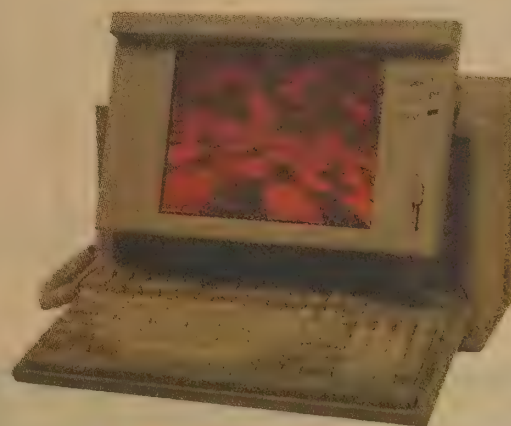
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PC Connection and MacConnection, one of the largest software-and-accessories mail-order houses in the country, have stopped using styrofoam "peanuts" in their packaging, replacing it with newsprint, which is easy to recycle (or at least will degrade faster in landfills). Patricia Gallup, president of the two companies (as well as their new company that will sell software for the NeXT computer), said that the biggest impediment to reducing packing material was finding a supplier who could get them enough different-sized boxes. After finding such a supplier, the companies reduced their packing material significantly.

In addition, they've taken steps which have reduced the amount that they throw away by over 75% since the beginning of the year. The steps include reusing incoming packing materials in outgoing packages, separating out cardboard and steel banding for recycling, and creating a compost pile from the lunchroom waste. They also increased the recycled component of the paper in their catalogs and are requesting people who receive their catalogs but aren't interested in them to recycle them or pass them on.

At Macworld Expo, they handed out 50 *Things You Can Do to Save the Earth* to everyone who placed an order.

Sybex Inc., a leading publisher of micro-computer books, announced that it will start using the National Recycling Symbol on all of its books that use recycled paper to alert readers to the importance of recycling. Since Sybex expects to print over three million books this year and the vast majority of them will use recycled paper, Sybex expects that its practices will save over fifteen thousand trees, reduce landfill by 2,700 cubic yards, and reduce water usage by over six million gallons. Although other publishers also use recycled paper, few specify it on their books.

Many paper recyclers say that one of the major impediments to greater use of recycled paper is the fact that many people don't know its many uses. Sybex's move should help.

It is clear that many computer users are concerned about ecology. Gallup said that they received dozens of letters asking them to stop using styrofoam, and even more when they announced that they had. As people become more aware of environmental degradation, they will gravitate towards companies that show more concern for the ecology. By publicly stating their environmental actions, companies can both help the planet and differentiate themselves in the market. ■

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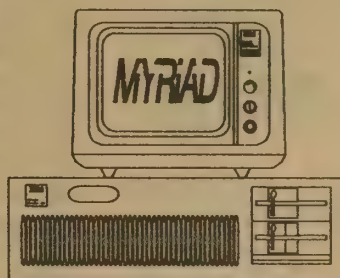
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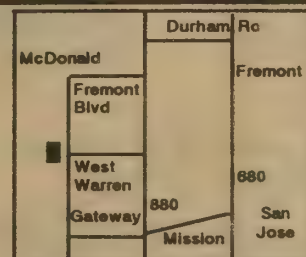
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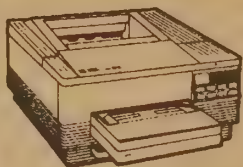
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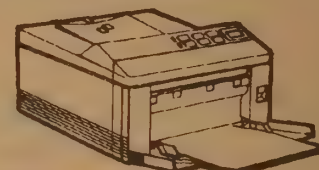
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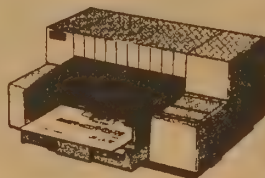
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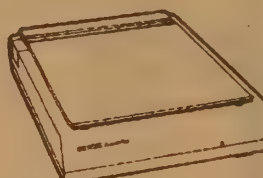
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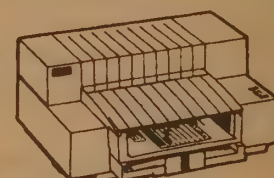
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- 68030 processor
- Built-in support for 4 video monitors.
- Internal expansion slot
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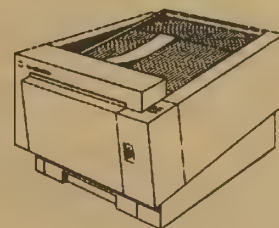
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### Apple® Personal LaserWriters®

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## "Talking" Computers, Unified Laptops & RoboSpy #2

BY JIM  
WARREN

**T**his column concerns techno-things that haven't been done, but *you* can do—plus some governmental techno-toys that might better be left undone.

### A TALK PROGRAM

Many multiuser host computers have "talk" programs. They permit two users to type simultaneously, while viewing what the other person is typing at the same time. They split the screen, scrolling one user's text in the top

narrow. Each controls text and background colors for each window. Any user may transmit a request and specifications for common formatting; any user may override those specs on their micro.

### SAVE IT ALL

Each micro buffers all dialogue. Each user can watch text as it appears, or freeze it for slower reading. Incoming text is never blocked; it is captured in the buffer(s). Users

scroll to see off-screen text in any window—implemented on primitive

"pointless" computers by key-commands, window-selection and arrow-keys for scrolling. Modern micros use pointers and scroll-bars for each window—as well as for positioning and sizing the windows.

Each user enables or disables recording of the text in each window, at any time. Since multiple text-streams may be recorded, each user specifies how those streams are recorded. Each may go to a different file, or all may go to the same file, by text-segment—by line, paragraph, user-defined switch, etc. Each user may define how the author of each text-segment is to be identified in multi-author recording files—by author's name, font-type, text-color, etc.

Multi-author text in a single file may be stored in columns, with each line, sentence or paragraph aligned with others' text by approximate time of arrival. These user-defined text segments may be time-stamped.

This is just for starters. Allow for adding non-ASCII fonts, line-art and gray-scale images, video—still, slow-scan, standard, b&w, color, S-VHS, etc.—and digitized voice-over data. Kitchen sink comes later.

### BUSTLES FOR LAPTOPS

Now that we have superlight laptops, allow us to make 'em heavier. Let us integrate their often-associated luggage:

Offer a Diconix-type printer, powered by rechargeable batteries, that can latch on as an optional rear bustle—"docking" to the lap-

**Boon for laptop owners: offer a Diconix-type printer, powered by rechargeable batteries, that can latch on as an optional rear bustle—"docking" to the laptop like NEC's laptops neatly dock to desktop bases. Folks should not be required to carry and juggle a printer and cables as separate units.**

top like NEC's laptops neatly dock to desktop bases. Folks should not be required to carry and juggle a printer and cables as separate units.

Offer a latch-on bottom-bustle containing four lightweight extension legs—like those on a camera tripod. Include six holes into which they may be screwed—four for a four-legged setup; the fifth and sixth centered and slanted to the front and the rear. Either of those, combined with the rear-pair or front-pair of the first four, permit a tripod setup. (Laptops are best used above and in front of laps, rather than on them.)

For all combinations, offer low-profile latch-on bustles that hold the power converter, 12-volt car-power plug (some folks think they're for cigarette lighters), and power cord storage. Users should have the option of carrying a power converter and power cord as part of their laptop; not as tangled separate packages.

[These ideas spawned from dinner-table discussions with Jay Thorwaldson, who uses his laptop everyplace from TV-couch and living-room meetings to High Sierra trails and Nevada desert river washes. He's de-

## REALIZABLE FANTASIES

half and the other's text in the bottom half.

Let's offer much more, for much less cost. We can facilitate discussions, automate meeting minutes—and help the hearing-impaired.

Implement "talk" on micros—so nothing is needed at each end of a phone line other than a micro-plus-modem. Expensive host computers and data-lines need not be clogged with such same-time/same-place private "conversation." And this fantasy has much more:

### MORE THAN TWO CAN PLAY

More than two participants may participate by daisy-chaining machines together. Each micro that's internal to the chain has two modems and two phone lines. The "internal" micros pass text coming in one port, out the other port. Such text is tagged with its originator's identity. Further utility is possible when some of the micros are on a local area network.

Each user's text appears in part of each other user's screen. Each user controls which text window—on *their* micro—is assigned to which writer. Each user controls the width and height of each window, as well as its location on the screen, on their own micro. Each controls line-wrapping—at character, at space, at non-alpha, none at all (partly hiding lines), etc.

Each user controls the size and font(s) of each window's text—large or small; wide or

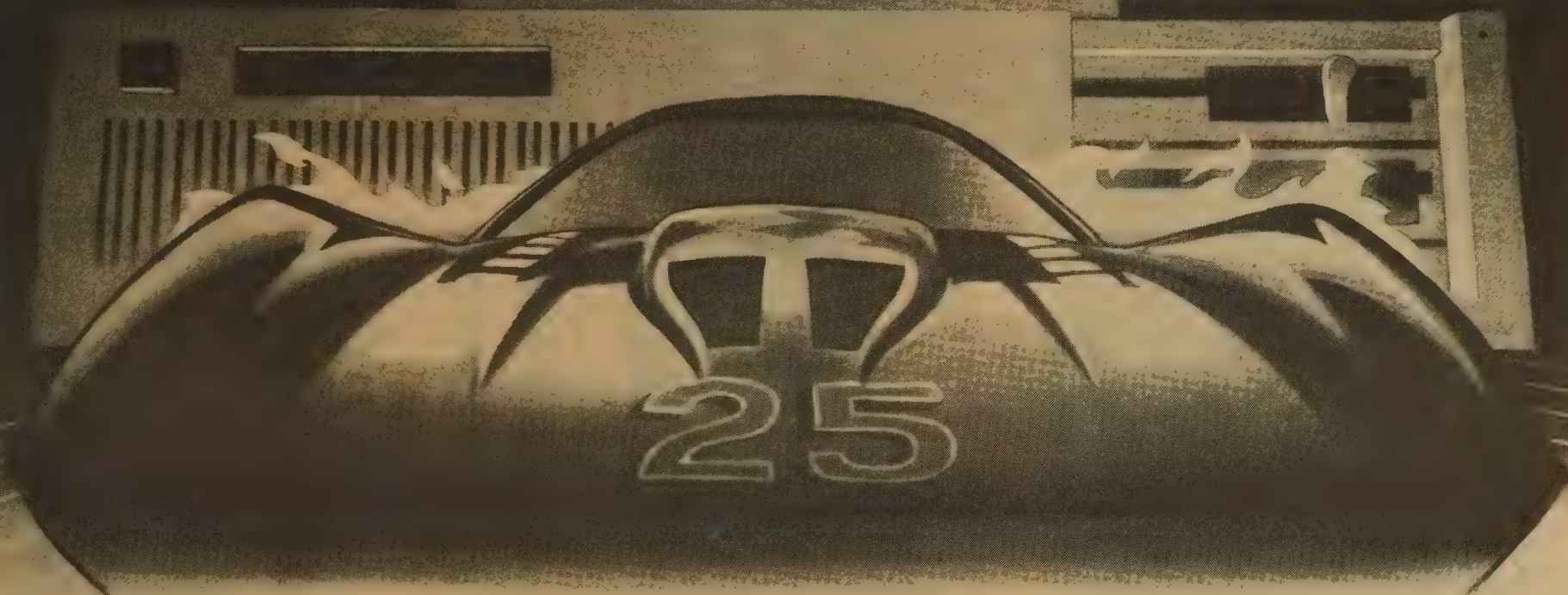


Copyright © 1990 by Jim Warren. All rights reserved. Jim Warren founded InfoWorld, the DataCast proposal for broadcast-based paperless electronic newspapers, Video Initiative, Wireless Digital, Initiative, Inc. and one of the nation's largest public microcomputer conventions. He was founding host of PBS television's "Computer Chronicles" series, founding editor of Dr. Dobb's Journal, founding President of the Microcomputer Industry Trade Association and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics.



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- Serial/Parallel port
- Enhanced keyboard
- 58MHz performance

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- VGA SYSTEM: **\$2295**
- S VGA SYSTEM: **\$2495**

### **MICRO CACHE 386-25MHz**

- 386-25MHz CPU, 32 bit
- 385-25MHz CACHE controller
- 4MB RAM memory
- 1.2MB Teac floppy disk drive
- 84MB Fast hard drive 18(ms)
- Serial/Parallel port
- Enhanced keyboard
- 38MHz performance

- BASIC SYSTEM: **\$1695**
- VGA SYSTEM: **\$2095**
- S VGA SYSTEM: **\$2295**

### **Micronics Cache 486-25MHz**

- 80486-25MHz 64K cache
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- Serial/Parallel port
- Enhanced keyboard
- 114MHz performance

- BASIC SYSTEM: **\$4495**
- VGA SYSTEM: **\$4895**
- S VGA SYSTEM: **\$5095**

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| • Micropolis MFM 70MB (28ms)            | \$ 599 |
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## NEWS & VIEWS

Under the guise of the president's National Drug Control Strategy, administration officials now want to interconnect previously separated record systems on citizens, and allow computerized "expert systems" to initiate investigations.

signed his own collapsible tripod for his laptop.]

### DARK FUTURES #2: ROBORUMORS

Under the guise of the president's National Drug Control Strategy, administration officials now want to interconnect previously separated record systems on citizens, and allow computerized "expert systems" to initiate investigations. Example record systems may include bank EFTS (electronic funds transfer systems), IRS records, Medicare, Social Security, INS, FBI, etc.

They plan to permit these artificially intelligent automated investigators to use incomplete and even inaccurate data. (Note: Investigators already commonly use personal and financial records maintained on millions of citizens by credit surveillance corporations such as TRW, Equifax, etc., even though they are notoriously error-laden.)

And, since this government proposal is purportedly for law enforcement, citizens and elected officials will have little opportunity to see—much less correct—erroneous government-gathered data about themselves. Unless, of course, they are friends with a data-entry clerk in any connected agency.

(Remember how FBI Director J. Edgar Hoover gathered and maintained secret files on elected representatives—who then dared not oppose him?)

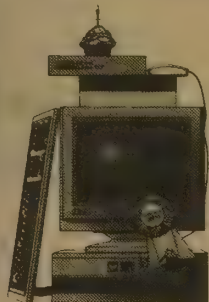
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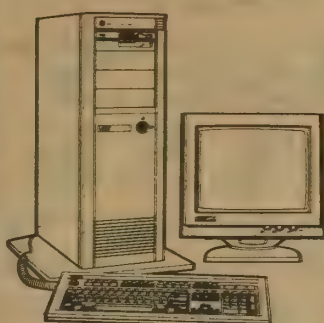
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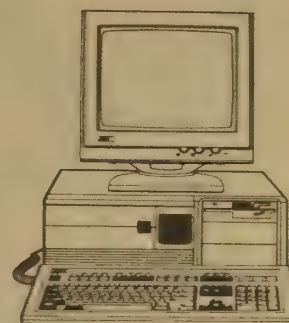
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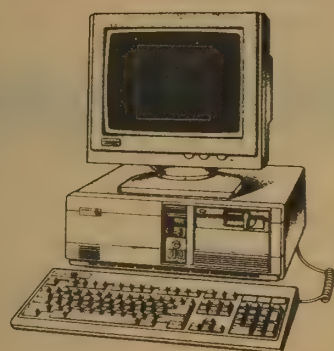
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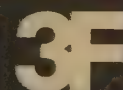
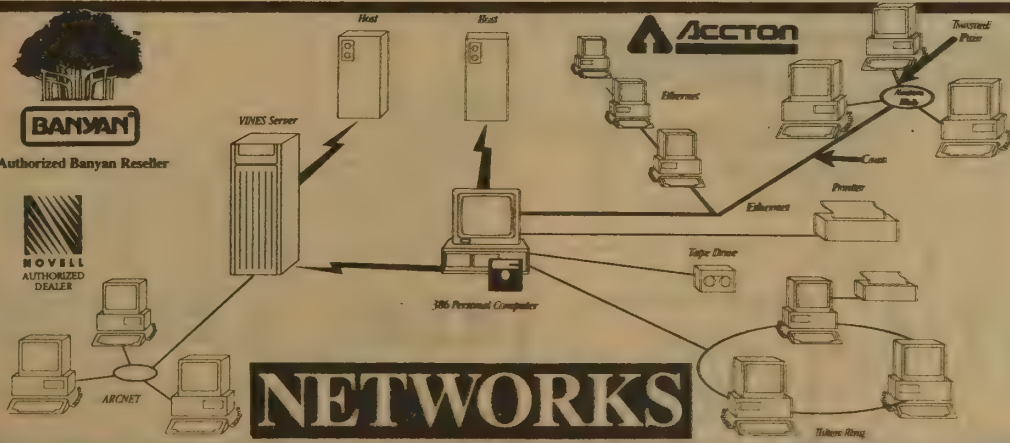
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| KX-P1191: 9-pin .....  | 219   |
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| KX-P1524: 24-pin ..... | 495   |
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#### • ALR

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|----------------|--------|
| ALR-FSX10 -386 | \$2020 |
| ALR-FZ225 -386 | 2764   |
| ALR-F233-386   | 3814   |
| ALR-F33-150    | 7193   |

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|----------------|--------|
| DeskPro 286M40 | \$2165 |
| DeskPro 386/20 | 3465   |
| DeskPro 386/25 | 5235   |
| DeskPro 386/33 | CALL   |

#### • IBM

#### • APPLE

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| MAC SE/30 1 FL          | 2549   |
| MAC IICx/40 MB          | 3575   |
| MAC +/-MAC IICi         | CALL   |
| Apple Laser Writer IINT | 3199   |

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#### • MICRONICS

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| 486-25 MHz/Cache | 2695  |
| 486-33 MHz/EISA  | CALL  |

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| 486-25 MHz/Cache | 3100  |
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| Amber Flat 14"             | 98              |
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| Seiko VGA CM1440/1450      | CALL            |
| NEC 3D/4D/5D               | 599/1125/2229   |
| Nanao 9070S/9500S          | 939/2769        |
| Sony 1390A/1304            | 624/665         |
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| Panasonic 1624/1124  | \$495/279 |
| Fujitsu DL 3400/5600 | 425/1259  |
| Okidata 320/321      | 346/489   |
| Okidata 390/391      | 489/636   |
| Cannon A50/A65       | 355/554   |
| Toshiba 351/341SL    | 899/599   |
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| ST-251-1, 40 MB 28ms               | 280     |
| Toshiba MK 134 (44) 25 ms          | 375     |
| Mitsubishi MR535                   | 330     |
| Micropolis 1335 71 MB              | 539     |
| Maxtor All Models                  | CALL    |
| CDC All Models                     | CALL    |
| CDC-106 MB/162 MB/385H             | Special |
| Western Digital 40MB               | CALL    |
| Other Brands and Models Not Listed | CALL    |
| NEC 40/150 MB All Models           | CALL    |

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| WD 1006 MM2             | 115     |
| WD 1006 SR2             | 135     |
| WD 7000 Fast SCSI       | 325     |
| WD 10007 ESDI WAH/WA2   | 175/216 |
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| Adaptec 1:1 2322B ESDI  | 195     |
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| Paradise VGA 1024i          | 254     |
| VRAM 512K/1024i             | 445/250 |
| ATI VGA 512K                | 230     |
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| Renaissance RVGA1/II        | Special |
| PixelWorks CA1280-DO8       | Special |
| Cobra 1 B3 1024x800 (256)   | Special |
| Image MGR 1024 2- B3        | Special |
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| Vertical Case/Base   | 198    |
| 230W/275 W           | 50/120 |
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| Logitech C9 Ser/Bus | 65/75 |
| Trackman            | 85    |
| Microsoft           | 98    |

#### • MODEMS & TAPE BACK-UP

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| U.S.R HST All Models   | Special |
| Telebit T1000 (9600B)  | \$694   |
| Telebit T25AA (19200B) | 959     |
| Hayes                  | CALL    |
| All Laptop Modems      | CALL    |
| Everex 1200/2400 (Int) | 72/135  |
| Everex 2400 (Ex)       | 169     |
| Colorado DJ-10         | 275     |
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|-----------------------------------------------------------------------------------|--|

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|----------------|-------|
| Cannon 20      | \$740 |
| PanaFAX KXF100 | 645   |
| Ricoh RF920    | 969   |
| Toshiba 3600   | 895   |
| Sharp F0230    | 679   |

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| Hitachi              | CALL |
| Numonics Series 5500 | CALL |

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| T1200 HB/FB  | 1896/1339 |
| T1200H       | 1705      |
| T1600        | 2954      |
| T3100E/40MB  | 2533/3015 |
| T3200/SX     | 3196/CALL |
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| T5200/100 MB | 4644/5006 |

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|         |        |
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| PC-252M | 1889   |
| PC-4602 | 1265   |
| PC-4641 | 1915   |
| PC-5541 | 3629   |

#### • MITSUBISHI

|         |        |
|---------|--------|
| MIT 410 | \$2271 |
| MIT 409 | 4791   |

#### • COMPAQ

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|--------------------|--------|
| COMPAQ SLT 286 M20 | \$3695 |
| COMPAQ SLT 286 M40 | 3995   |
| COMPAQ III M20     | 3295   |
| COMPAQ III M40     | 3795   |
| COMPAQ 386 M40     | 5295   |
| COMPAQ 386 M100    | 6495   |

#### • ZENITH

|                   |        |
|-------------------|--------|
| SuperSport 184/1  | \$1385 |
| SuperSport 184/2  | 2085   |
| SuperSport 286/20 | 2935   |
| SuperSport 286/40 | 3239   |
| SuperSport 386/40 | 3585   |

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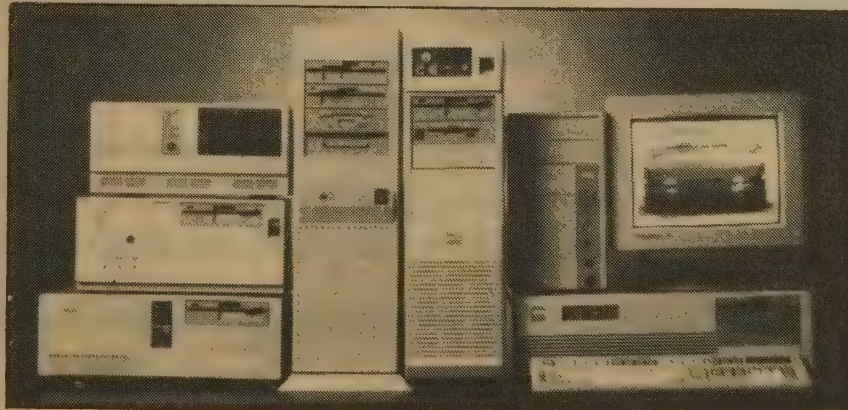
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|---------------|------|
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| Netware 2.15  | CALL |
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| SummaGraphics 12x12 | 345  |
| Hitachipuma         | 355  |
| Hitachitiger        | 425  |
| Numonics            | 476  |



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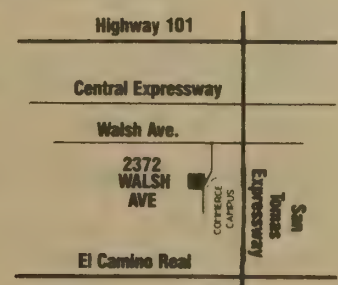
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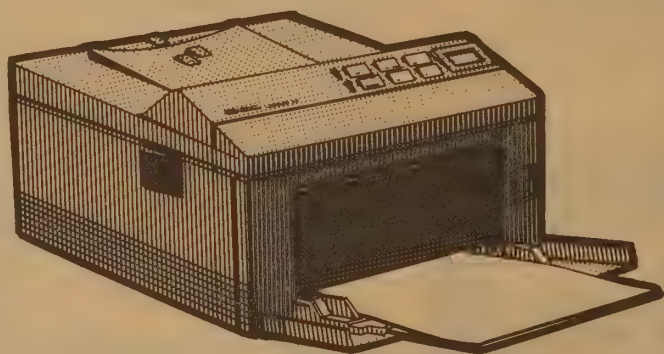


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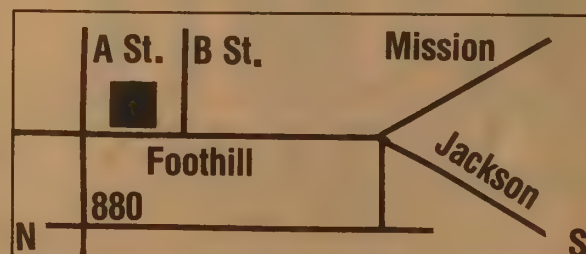
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# BUSINESS SOLUTIONS

## CD-ROM In Business: Hype Vs. Reality

*This Isn't The "Year of CD-ROM."  
Next Year Won't Be Either.*

BY PAUL  
HOFFMAN

**C**D-ROM technology has now officially joined artificial intelligence, LANs, and multimedia in the ranks of overhyped, too-much-promised-too-soon technologies. All these products had lots of promise, but many people overlooked their obvious shortcomings when industry prognosticators promised that some year was the "Year of This Technology." Computer buyers, the final arbiters on what will become hot, have generally passed on CD-ROM hype, leaving the CD-ROM market to grow only on its merits.

Still, as with CD-ROM's over-promoted brethren, this may help the CD-ROM market more than it hurts it.

Five years ago, when CD-ROM technology was just revving up, the hucksters promised the world to everyone. To business people, they promised cheap, massive databases of business information; to home users, they promised animated video-quality pictures and digital sound; to scientists, they promised that every major database would be available on one or two disks.

All this was possible and a small part of each promise has come true. Somewhere between fifty thousand and two hundred thousand CD-ROM players are in use on microcompu-

ters today (depending on whose numbers you trust), making a very limited market for software developers. The hucksters blame it on the chicken-and-egg phenomenon, ignoring the obvious: buyers don't like to be lied to.

### THE BIG LIE

If you have a CD-ROM reader or have seen one in use, you know the big lie: they're not slow, they're glacial. Molasses in winter. Snails on Valium.

That's not "a big problem"; it is totally crippling for everyday use. You don't have fun playing a computer game that takes four seconds to put up the next photo-realistic screen or takes a second to get the file that speaks the next line. When it takes a minute to read the directory of a disk, the term "high technology" doesn't spring to your lips. Sure, it's wonderful to have 500Mb on a single platter. That's so much information it's almost unimaginable.

However, slower-than-slow is just too hard to handle for most people. CD-ROM is the first technology to show clearly that personal computer users have been taught over the last decade to care much more about speed

**OS/2 and Windows 3  
don't need a fast  
80386, but users do.  
Few reviewers of OS/  
2 complained that it  
ate up a third of their  
disk space, but rather  
that it "forced" them  
to get a faster system.  
CD-ROM technology  
sales dweebs are  
trying to convince  
people big is worth  
slow—and only a few  
people are buying it.**



than size. Every time a new application came on the market that ran slowly, it was derided as being a CPU hog. Only a few years ago people would go out and spend \$4,000 for an upgraded computer system so they could run a \$700 program at a reasonable rate instead of running it slowly on their current system. OS/2 and Windows 3 don't need a fast 80386, but their users do. Few reviewers of OS/2 complained that it ate up a third of their disk space, but rather that it "forced" them to get a faster system.

CD-ROM technology salesdweebs have a real problem: they are trying to convince people big is worth slow—and only a few people are buying it.

The slowness of the drives significantly cut the popularity of CD-ROMs, but by no means killed the market. CD-ROM drives started out at around \$1,000 and have come down to about \$600. That is still not cheap, but the price has not deterred people who had a desire for a specific CD-ROM application from buying a drive.

Most companies that sell CD-ROM applications have low-cost bundles that include both software and drives for a few hundred dollars less than the items separately.

When you need lots of data, a few hundred megabytes at a time, CD-ROM is still one of the only reasonable approaches. Many applications have limped along due to the difficulty of distributing large amounts of information at once; now that more buyers are starting to consider CD-ROMs as possible upgrades, these areas are starting to get new interest. On the other hand, sales of CD-ROM drives have been so slow that many drive and software manufacturers have been privately admitting that they'd like to get out of the market.

## THE FIRST SUCCESS: PUBLIC DOMAIN SOFTWARE

One of the first popular uses for CD-ROM disks was for public domain software and shareware libraries. During the early days of CD-ROM, user group librarians looked

around, realized that they had hundreds of megabytes of data on their hands, and put two and two together.

At first, this didn't bring off the hoped-for professional look that CD-ROM manufacturers wanted, but it turned out to be a great thing for many reasons. Everyone expected book publishers to put their large works on CD-ROM, but book publishers are notoriously slow at doing anything new. Their argument, probably valid, was that they had no idea how to deal with multiple copyright issues with CD-ROM. If you put the work of fifty authors on one disk, how do you apportion the royalties? You can't split them up evenly, since people may buy the disk mostly for the work of just one author and that author would be shorted by an even-split scheme. The royalty conundrum was so bad that it has to this day prevented all but a few multiple-author disks from being released.

Public domain software gets around this problem since it is already distributed in a multi-author environment. The authors weren't asking for any distribution royalty, only shareware fees. After the first few public domain CD-ROMs were released to the brave souls who bought the CD-ROM players, it became obvious that CD-ROM was a great medium.

One of the problems with buying diskettes with public domain software is that you must rely on the descriptions of the software—and those descriptions are often sketchy at best. Having all the files in one place made it very easy to try out all the competing programs off the CD-ROM and choose which was best. It also made searching easier, since you could look for a file by name over the entire disk (if you had the time). Since public domain programs are usually small, the time penalty for copying them was not noticed. People could see how CD-ROMs might help them in the future if they were just a bit faster.

An offshoot of the success of the public domain disks was the advent of CD-ROMs full of clip art. When you need clip art, you can never have too much of it to choose from. Since pictures take up a great deal of disk space, clip art lends itself well to CD-ROM technology. There are many disks of commercial clip art that, although they cost hundreds of dollars, can come through in a pinch for people who need clip art fast and want a wide selection. For example, NEC sells many disks of clip art and photographic images for around \$400 each. Many disks have the art in many file formats to make it easier to include it in different applications. Clip art became the second example of where CD-ROMs

**With a CD-ROM, the promise went, financiers, engineers and scientists would never have to pay a commercial vendor for access to data again. The promises overlooked an important fact: the data was owned by those same commercial vendors, and they weren't particularly interested in giving it away for free or even cheap.**

could succeed where diskette-based distribution couldn't.

## DATABASES: EASIER, BUT NOT CHEAPER

When CD-ROM was still just hype and not products, one of the promised applications was large datasets. Imagine having instant access to a 500Mb dataset in your area of business or field of research to search—in any way you want, at any time you want!

The people most likely to want this, according to the projections, were financiers, scientists, and engineers. At the dawn of CD-ROM, these folks had all that data there, but it was locked up in commercial databases that were very expensive to search. With a CD-ROM, they would never have to pay a commercial vendor for access to the data again.

The promises overlooked an important fact: the data was owned by those same commercial vendors, and they weren't particularly interested in giving it away for free or even cheap. Like book publishers, these people have permanent mainframe mentality and don't mind being patronized by customers who have the same mentality.

This is not to say that CD-ROMs wouldn't be wonderful for their clients: even with terribly slow searches, they would be a godsend. Trying to explain that to the data vendors, however, was almost impossible.

A few data vendors, most notably DIALOG, have started releasing their data on CD-ROM in the past few years, often with some commercial success. No one, however, would say

**After the first few public domain CD-ROMs were released to the brave souls who bought the CD-ROM players, it became obvious that CD-ROM was a great medium.**



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**1985** Introduced the 286 AT motherboard, and opened our U.S.A. sales office in San Jose, CA.

**1987** Introduced the 386 25 MHz AT motherboard and opened our second office in Houston, TX. U.S.A.

**1989** Introduced the 286-33MHz w/ 64K cache and 486-25MHz motherboard.

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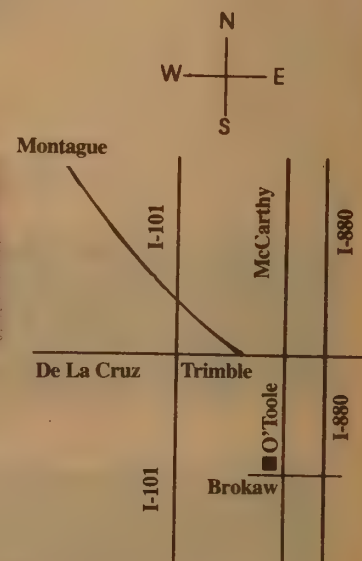
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that the data is now cheap. An annual subscription to the CD-ROM version of the index to engineering journals, for example, costs \$3,450. If you want to share that data over a network, you double the cost.

As you can see, the advantages of using databases on CD-ROM instead of from a data vendor are not financial (the euphemism DIALOG uses is "predictable costs"). Instead, the advantages are better control of the data output, easy access, and the ability to guess wrong about search methods without financial penalty.

A positive outgrowth of the high-priced data CD-ROMs has been the emergence of less popular datasets at low cost. For example, there are expensive agricultural CD-ROM databases that are also available online. Recently, ALDE Publishing, a generic CD-ROM vendor, released a disk with a good-sized research database from the University of Michigan. A few years ago, that data might have been available only to a few people or to users with a mainframe tape drive; now anyone with a CD-ROM player can get unlimited access to the data for \$200. Similarly, many magazines are now putting the contents of their back issues on CD-ROM and selling them for under \$500.

Many businesspeople look at the cost of CD-ROM data in terms of how much it costs to manually look up the information in its current form. For instance, you can now buy disks that have ninety million white page listings from the entire US for \$1,900. While that might be high for many businesses, any company that pays for telephone books and pays people to search through them might find that the cost is easily made up in lower salary costs due to faster searching.

## WHERE CD-ROM HAS GONE WRONG

More than just abysmal speed has slowed down sales of CD-ROM drives and disks. Disk manufacturers have shown such rampant bad judgment in formatting the data and search engines that many people who have gone out of their way to buy a drive and a disk have nothing good to say about them. A few examples of what has gone wrong in the CD-ROM world so far:

- Only a miniscule number of disks can be read by both IBM PCs and Macintoshes. Industry numbers differ, but most people agree that there is near-parity between the two platforms as to numbers of CD-ROM

**You can now buy disks that have ninety million white page listings from the entire US for \$1,900. While that might be high for many businesses, any company that pays for telephone books and pays people to search through them might find that the cost is easily made up in lower salary costs due to faster searching.**

players sold. Most large companies have both PCs and Macs, but probably only one CD-ROM player. It is asinine, then, that someone who makes a disk can't spend a little extra time to double the size of their market.

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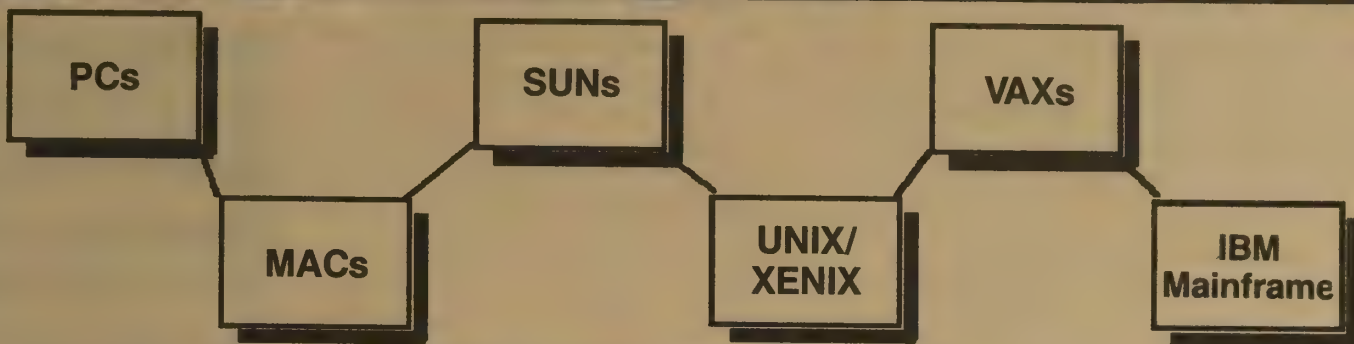
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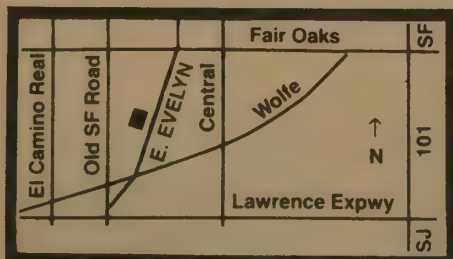


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# BUSINESS SOLUTIONS

This is not due to any technical problem: the drives and system software for both platforms can read disks that are formatted to the international standard. As it is, clip art for one system can't be used with another. Silly as it may sound, these companies are simply choosing to halve their markets rather than spend about \$10,000 to add the software for the other platform to the disk.

•CD-ROM drive access could be made much faster with more intelligent disk driver software. Right now, none of the driver software takes advantage of free hard disk space to "store ahead" when you read from a CD-ROM disk. For instance, if you have 5Mb free on your hard disk, the driver software could intelligently read from the drive and, while you are not accessing it, store up to 5Mb of what it thinks you might read on your hard disk for fast access.

The same technology has been used to speed up standard hard disk access by phenomenal amounts using a megabyte of RAM. It turns out that it is, in fact, not hard to guess the next thing that will be read off of the disk drive, especially if there is lots of room to put a few guesses on. Right now, no CD-ROM drivers use this method to speed up disk access.

•The interface software that comes with most CD-ROM databases is among the least attractive software imaginable. The terminate-and-stay-ready software that Microsoft ships with its CD-ROMs takes up nearly 150K of RAM; with a bit of tuning, it should take up less than a third of that. The user interfaces on many of the public domain disks make searching for a particular file a tedious guessing game. The search engines that come with the more expensive databases are sometimes better than awful, but the standard is still unfriendly at best.

## WHERE CD-ROM CAN GO RIGHT

All these problems are easily fixed. Unfortunately, many CD-ROM vendors have all but given up on the prospect of making money in the market. This is where the chicken-and-egg dilemma comes up: if CD-ROM publishers aren't willing to sweat out the details to the extent that other software publishers are, business users won't get enthusiastic about the medium.

With some universal changes, CD-ROM could get a second wind—and possibly wide acceptance. In its current state, it will probably only grow at the current lethargic rate. ■

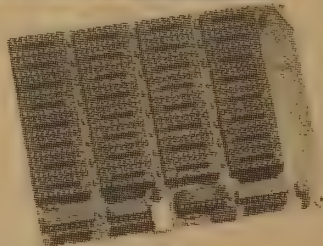
**Many CD-ROM vendors have all but given up on the prospect of making money in the market, creating a chicken-and-egg dilemma: if CD-ROM publishers aren't willing to sweat out the details to the extent that other software publishers are, business users won't get enthusiastic about the medium.**

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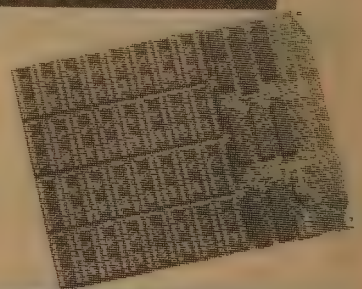
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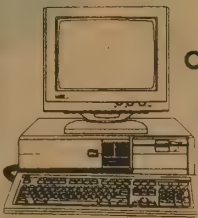
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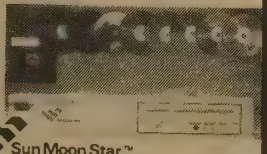
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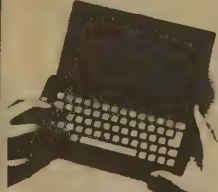
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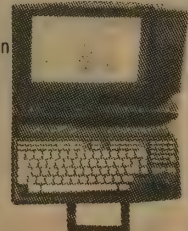


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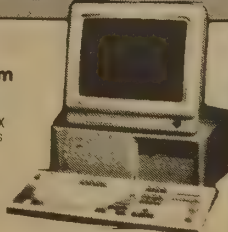
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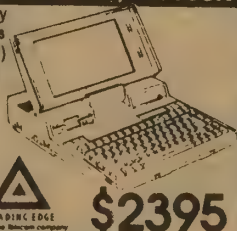


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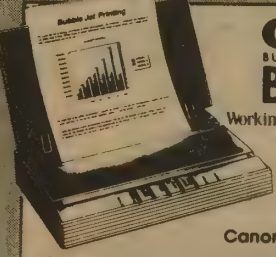
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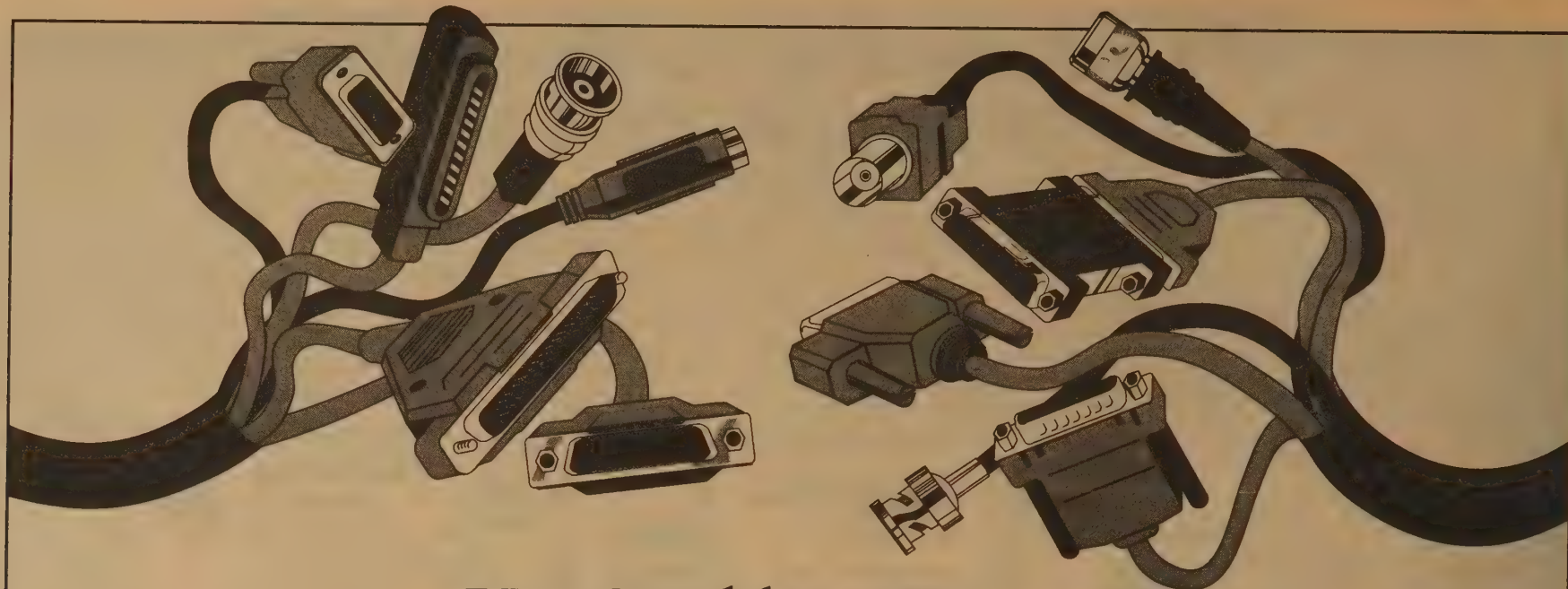
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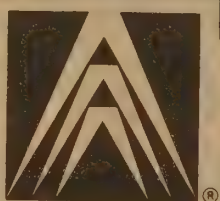
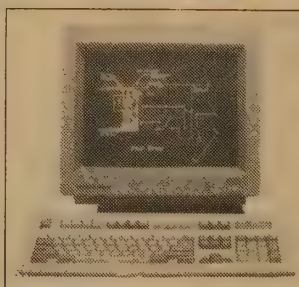
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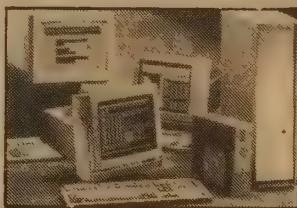
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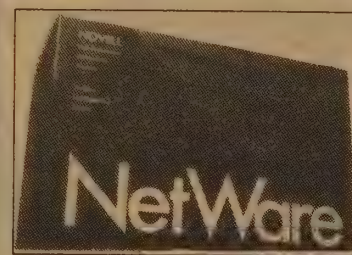
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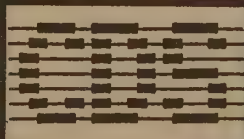
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# Applications For The Windows Office

## Word Processing, Telecommunications and More

**BY LENNY BAILES**

**L**ast issue we looked at the basic features of Windows 3 as a user interface. We saw that Windows divides its labor between the Program Manager and the File Manager. This makes Windows less elegant than the Macintosh Finder, but friendlier than the DOS command line.

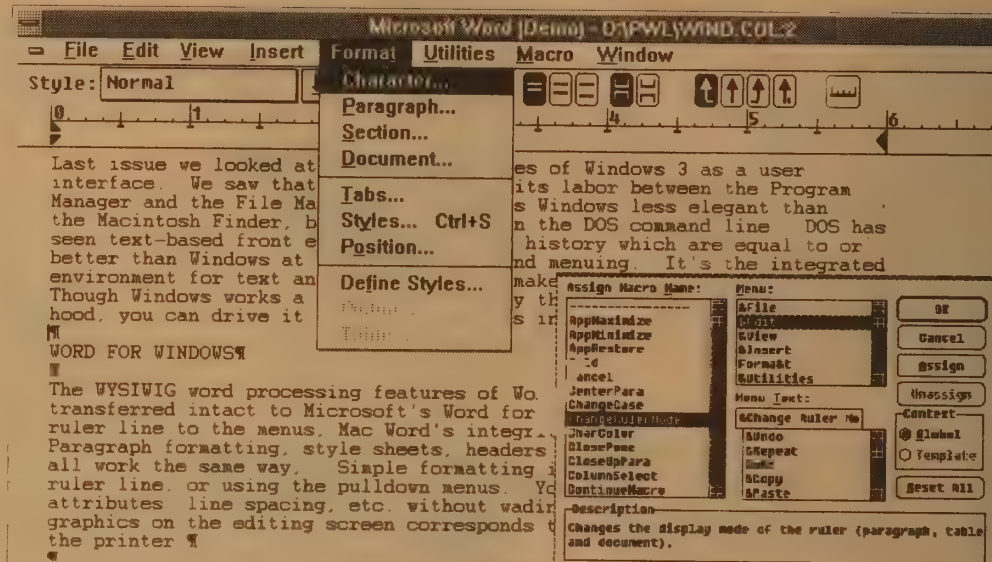
DOS has seen text-based front ends over its long history which equal or beat Windows at file management and menuing. The integrated environment for text and graphics is what makes Windows worth having. Though Windows works differently from the Macintosh under the hood, you can drive to the same places in the applications.

### WORD FOR WINDOWS

The WYSIWIG word processing features of Word 4 on the Mac have been transferred intact to Microsoft's Word for Windows. From the ruler line to the menus, Mac Word's integrity has been preserved. Paragraph formatting, style sheets, headers and footers, page and outline view—all work the same way. Simple formatting gets done by clicking on the ruler line, or using the pull-down menus. You can change fonts, styles, text attributes, line spacing, etc. without wading through submenus. Text and graphics on the editing screen correspond to what comes out of the printer.

Users of Mac Word and text-based PC Word should adapt easily to WinWord's enriched environment. Mac users might be surprised at the additional functionality in a familiar interface. Pull down the File Menu, and you find previously edited documents listed at the bottom. You can reload a document or switch files without using the Open command. WinWord also offers a built-in thesaurus, index generation, and automatic document comparison.

Hardcore PC users will be pleased with the powerful macro language. Any WinWord command or combination of commands can be assigned to a keystroke sequence, or installed on a menu. As with Mac Word, you can customize or completely rearrange all of the pull-down menu options.



WinWord can import graphic images from the clipboard, or read EPS, AutoCAD, HPGL, Lotus PIC, TIFF, and PCX files directly. Excel spreadsheets can be imported as tables which are automatically updated when you update the source data in Excel.

The table feature is more powerful on the PC than on the Mac. WinWord can read from tab-delimited or comma-delimited text, or directly import an Excel worksheet. Ranges of cells, rows and columns can be inserted, deleted or merged. Tables can be converted to or from paragraph, tab-delimited, or comma-delimited formats. Automatic tools can put custom borders around your tables.

WinWord reads and writes the more common word processing formats, including Word 5, WordStar, MultiMate, IBM DisplayWriter and WordPerfect 5.0. WinWord v1.1 also writes files for Macintosh Word 4.0.

WinWord's speed and stability appear to be satisfactory on my 12MHz 286 AT. According to reports on the FIDOnet Windows Conference, some users have had difficulty getting screen fonts to display reliably. I noticed a minor problem when shifting from Draft View to Page View. Occasionally, the specific document font was replaced by the generic Windows system font. The correct font reappeared on my system after I did a page preview and returned to Draft View. Microsoft has issued a maintenance upgrade, v1.1, which is said to address this problem.

Word for Windows has an interface similar to Word on the Macintosh. All Winword commands can become macros or menu choices.

### RESOURCES:

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**Word for Windows \$495**  
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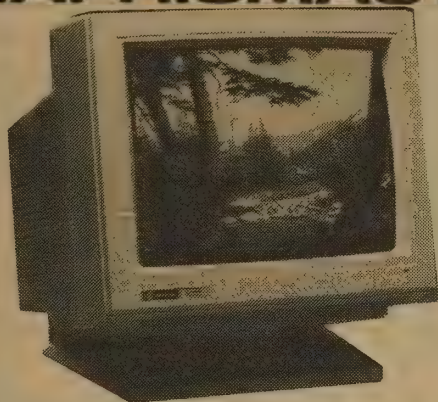
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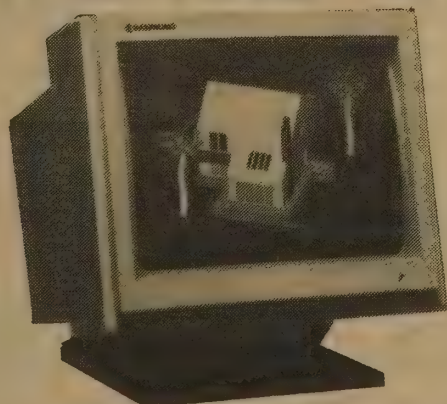
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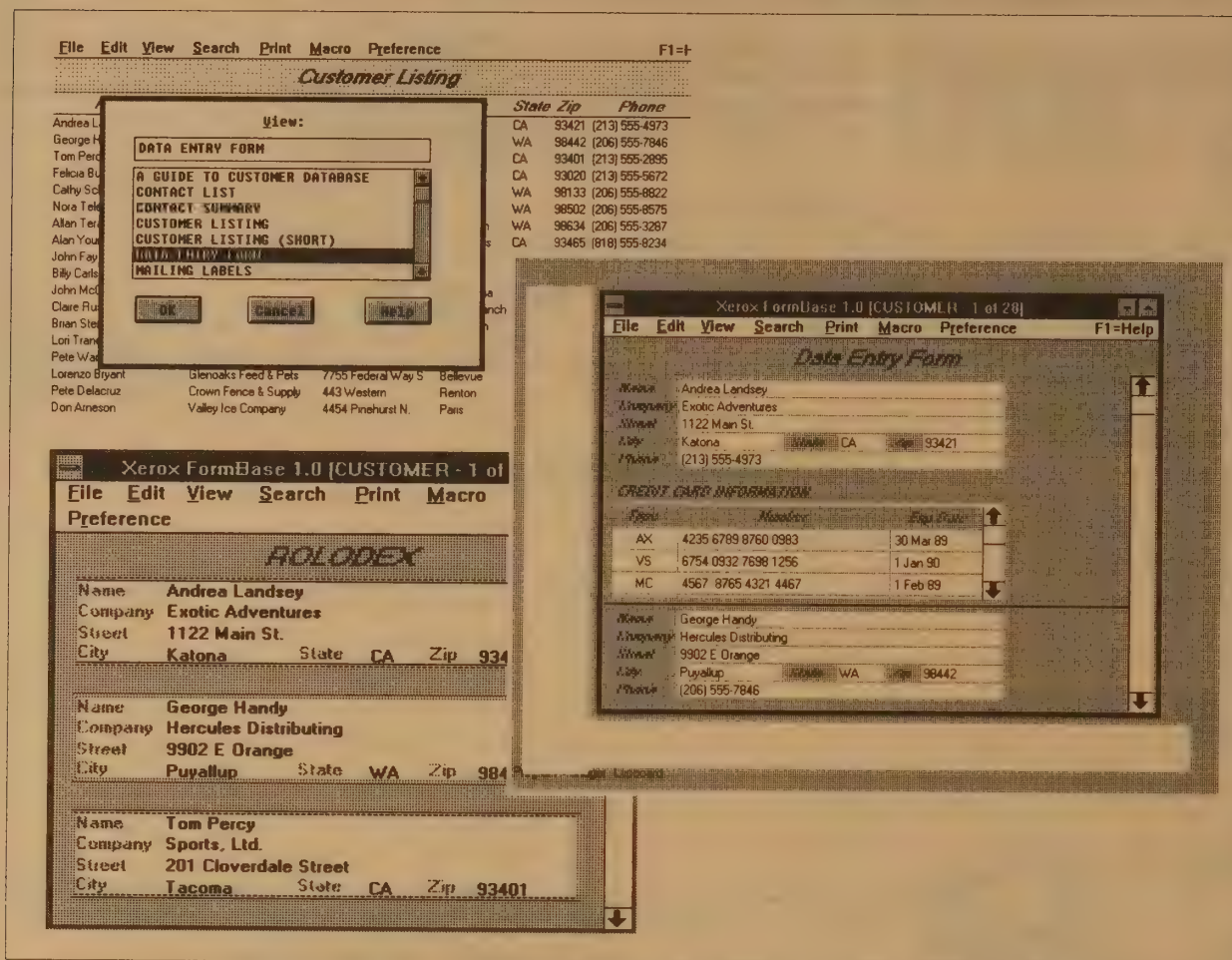
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**With Xerox Formbase, each form is a different database "view"**

Word for Windows is the strongest argument I've seen for starting an all-Windows office. Mouse editing and feature depth are combined in a package that's fun to use. For this program, at least, the wedding of the Mac-like interface to PC macro power is a big success.

## XEROX FORMBASE

A typical business will often use the same data over and over again for customer information records. The same names, addresses and billing data get entered for internal accounting, customer invoices, shipping forms, letters, and reports.

Frank Mahdavi had a vision. Why should users have to copy information over and over again from form to form? Why fudge multiple databases with import and export into word processing and desktop publishing programs? Why not have one intelligent, relational database pop information on the fly into graphic-based form templates?

Mahdavi's Formbase frees users from the drudgery of importing spreadsheet and database files into multiple programs for everyday publishing chores. Like FileMaker on the Macintosh, it allows for easy screen-based layout of forms and charts with multiple fonts and graphic images. You type in the name of a new field, and a box pops up on

your form. You can move, resize and change fonts in a field, and the data reformats to fit. You can cut and paste fields or groups of fields from form to form, building a custom library of invoices, customer notices and mailing labels. All of the forms can share the same company logo, address fields or billing data.

Since Formbase accepts scanned TIFF images, you can use it to create personnel records which include photographs. (The Formbase demo disk shows a series of student record templates for a university. Transcripts, registration and enrollment forms repeat the same information. With Formbase, one database can be poured into all of these separate administrative forms.)

Formbase is a powerful database manager. It has a full set of sort and filter options to locate fields, spawn new databases and generate reports. All of the math functions on a standard calculator are included for field arithmetic. The forms you produce are just different views of your database. Context-sensitive help is available for any command within the pull-down menus. You can also attach custom help messages to a specific field. This lets a manager set Formbase up as a simple data-entry tool for beginning users.

Formbase imports/exports 1-2-3, Excel and dBASE III-IV files in their native formats.

Other databases can be pasted in through the clipboard. (Scrapbook+, also reviewed in this article, allows data to be copied to the Windows Clipboard in comma-delimited or SYLK formats. The format is preserved when the clipboard is saved to disk.)

Version 1.0 of Formbase works only in Windows' Real Mode. V1.1 is fully compatible with Windows 3. Documentation for the program includes both reference and user training manuals. The documentation is thorough and readable.

There's a lot of power here, hiding under the menus. You won't learn everything overnight, but you should be able to get started quickly. The program includes forty-eight form templates and a sample graphics library. All that's needed for the next version is support for Windows' Dynamic Data Exchange. This would provide hot links between Formbase and Excel/Word for Windows documents.

## XEROX VENTURA PUBLISHER

The Windows version of this popular application may be good news to users trying to build a "solid Windows office." Ventura Software has ported 99.5% of the GEM-based program into the Windows environment.

The pull-down menu structure is mostly unchanged. VP for Windows reads and writes files which are compatible with the 2.0 and 3.0 GEM versions, the OS/2 version and the soon-to-be-released Macintosh version.

As a user of the GEM-based Ventura, I initially found the Windows version slightly slower, and less aesthetically appealing. The new "floating toolbox" and "file list" boxes obscure more text in facing pages view. You can't change text anymore by clicking on attributes with the editing tool.

But these are minor points. One could argue the other way: The Windows version offers keyboard shortcuts for most pull-down menu options. The toolbox and file list can be hidden or popped up with two quick keystrokes. The Windows macro recorder lets you preserve other menu combinations or mouse movements. Under Windows, Ventura's context-sensitive help is also greatly expanded. Twice as much information on each menu option pops up when you request it.

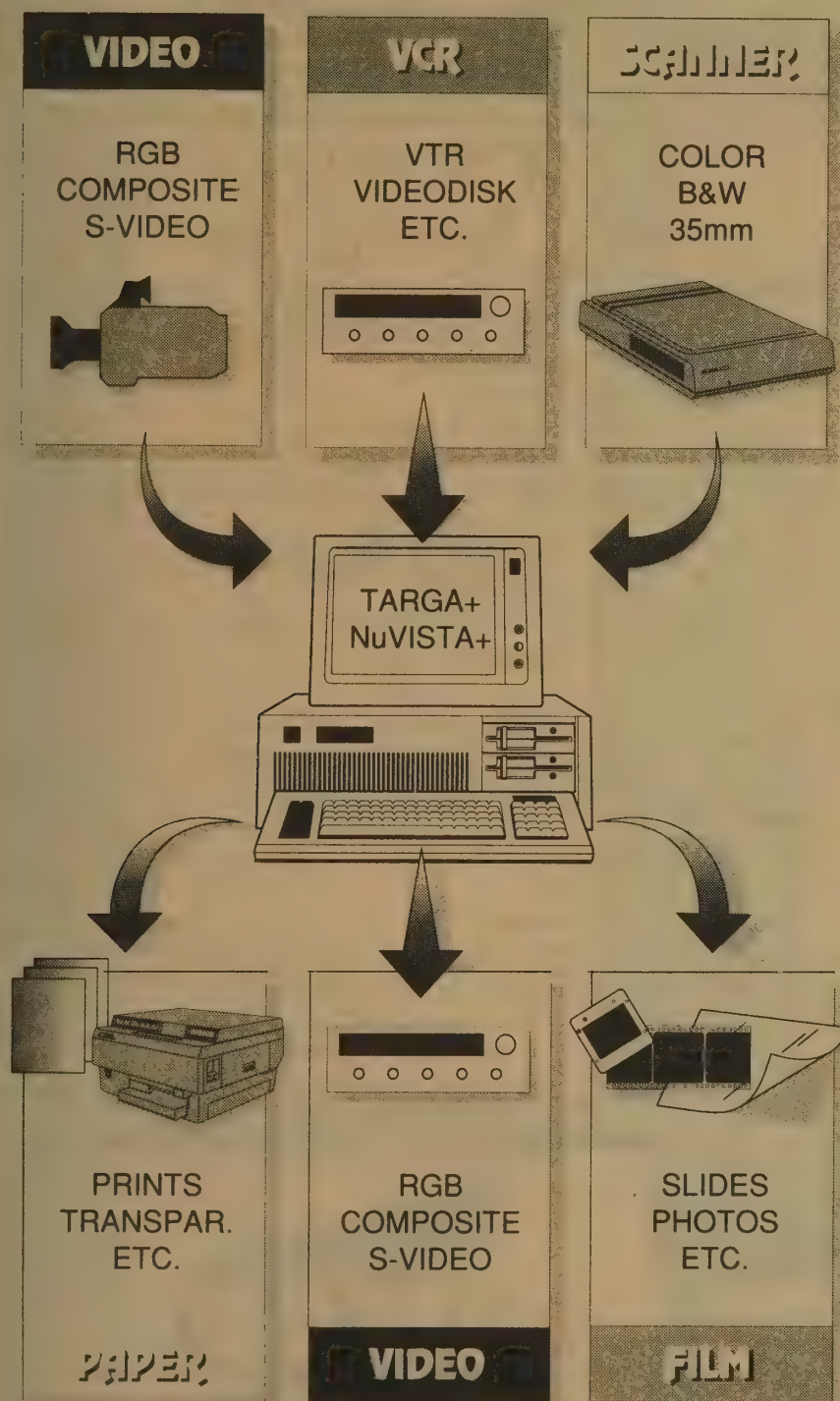
Ventura is still definitely Ventura. The program is known for its flexible stylesheets and ease of use with large documents. PageMaker users won't see any decrease in speed, and they might like Ventura's added text control, automatic footnotes, indexing, and page



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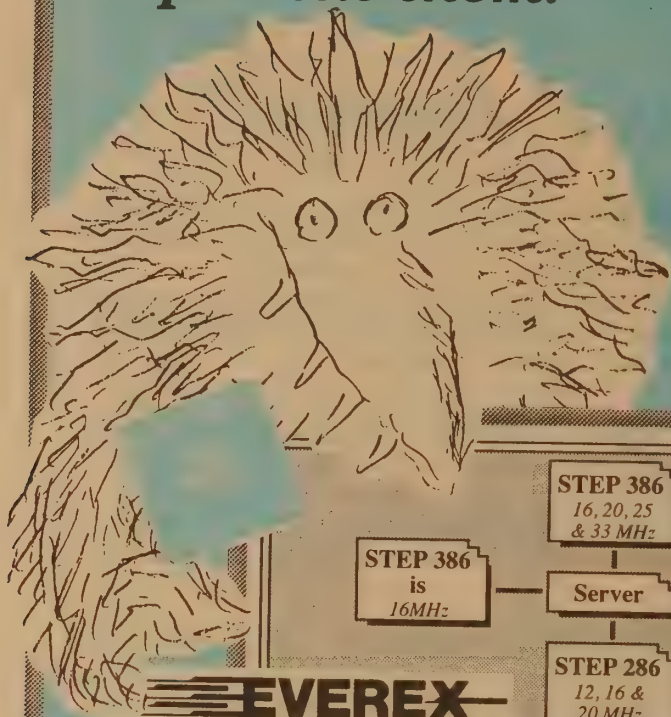
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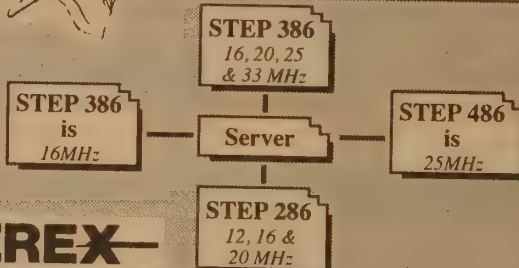
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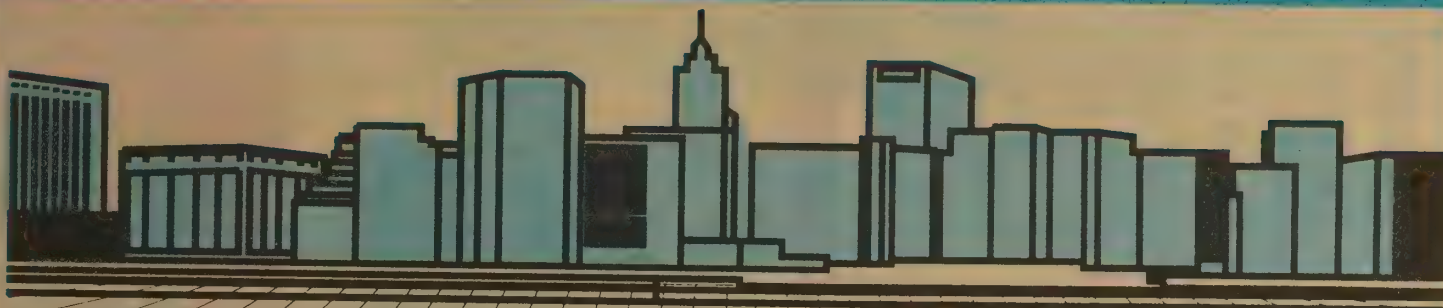
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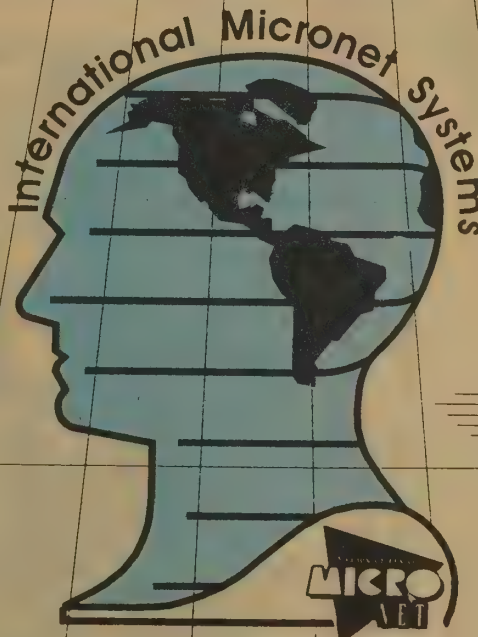
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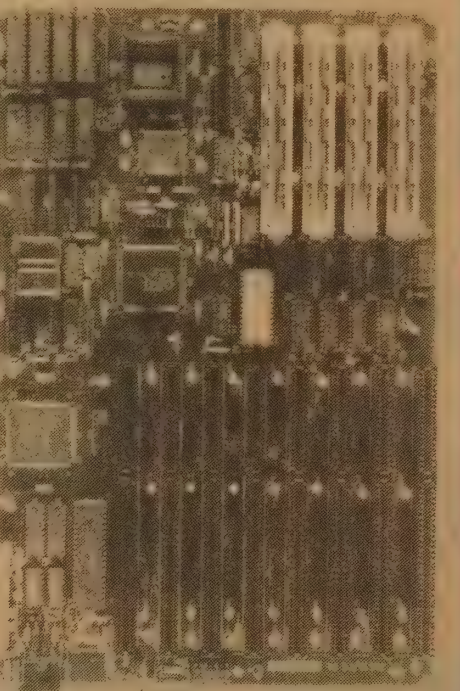
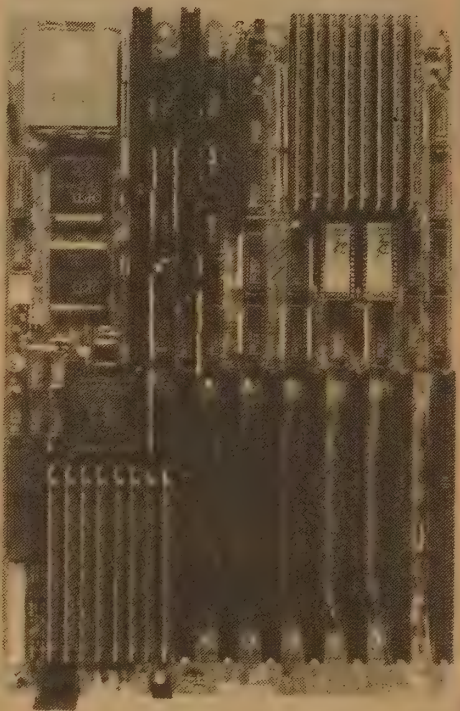
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## Comparison between SVT 486/25 and that of leading 486

|                                    | SVT 486  | Other 486 | % Increase | SVT 386SX |
|------------------------------------|----------|-----------|------------|-----------|
| <b>Memory Performance Tests:</b>   |          |           |            |           |
| Extended Read                      | 1.05     | 3.19      | 203.81%    | 1.32      |
| Extended Write                     | 1.05     | 3.07      | 192.38%    | 1.21      |
| <b>Video Performance Tests:</b>    |          |           |            |           |
| Direct Screen Access               | 1.86     | 2.74      | 47.31%     | 1.81      |
| Teletype w/o scrolling             | 0.33     | 1.1       | 233.33%    | 0.5       |
| Teletype with scrolling            | 1.09     | 2.25      | 106.42%    | 1.27      |
| <b>System Test Results:</b>        |          |           |            |           |
| Database Appl. Simulation          | 368.028  | 9.261     | 3873.96%   | 385.713   |
| Word Processing Simulation         | 709.616  | 178.575   | 297.38%    | 659.815   |
| CAE/CAD Simulation                 | 804.282  | 255.406   | 214.90%    | 458.256   |
| Throughput Test                    | 692.088  | 208.668   | 231.67%    | 577.685   |
| <b>Video Display Test Results:</b> |          |           |            |           |
| Aggregate Video Test               | 4042.166 | 102.537   | 3842.15%   | 3183.653  |

## Performance of the SVT 386SX

- Features of SVT 386SX
- 25 MHz Speed
- Shadow RAM + 256K Remapping
- Direct Map Posted Write Cache (16K-128K)
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numbering. (Surprisingly, Xerox didn't emulate PageMaker's ability to run multiple sessions under Windows. You can only open one document in Ventura, unless you have the OS/2 version.)

Ventura for Windows is a significant upgrade for users of the VP 2.0 base product. It integrates all of the features formerly found in VP Professional Extension. These include the equation editor, table module and support for vertical page justification.

If you already use the Professional Extension, you'll find that there are no significant feature additions in the upgrade to Version 3.

Footnotes can now flow from page to page, and some 2.0 internal bugs have been removed. Both GEM and Windows Ventura now include built-in network support for Novell and LANtastic.

Running Ventura under Windows allows you partial use of the Windows clipboard. You can cut and paste text or vector artwork from other Windows applications. Ventura doesn't currently allow bitmapped art to be transferred through the clipboard. Instead, you can paste the art into Windows Paintbrush and save it in PC Paintbrush format. Ventura can read PC Paintbrush files through its import filters. Ventura does allow style tags to be copied to the clipboard. This lets you cut and paste tags between style sheets for different documents.

Ventura for Windows comes with a Bitstream Fontware kit, which will generate Dutch and Times Roman printer and screen fonts. You should do this right away. The default Windows fonts look like chicken scratches in Ventura's full page view. The Fontware replacements are better.

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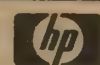


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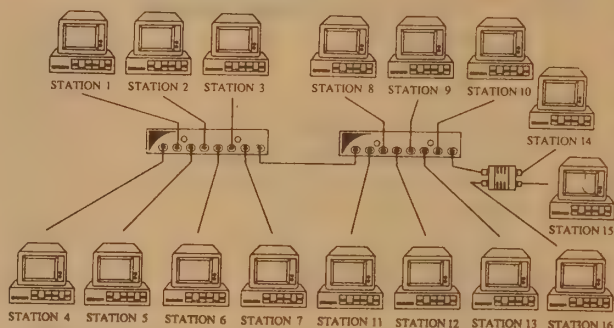
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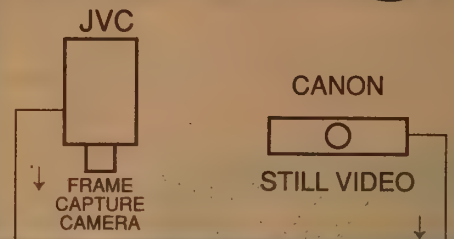
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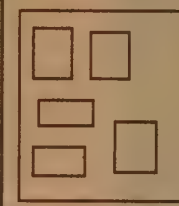
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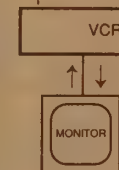
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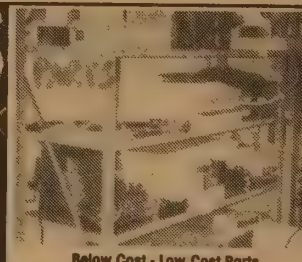
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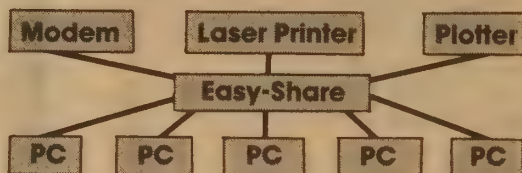
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# BUSINESS SOLUTIONS

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The worst drawback to Ventura for Windows is its slower print time on PostScript

and HP compatible printers. VP 2.0 under GEM took about two minutes to print a complicated chapter on my 512K LaserJet II. VP for Windows took seven minutes, and was unable to print the entire page, presumably due to the LaserJet's limited memory. The chapter came out intact on the LaserWriter II NTX, but with a corresponding decrease in speed. You can do better on print time with Windows with the addition of custom-designed disk cache and spooler programs. At the recent Seybold Conference I saw Ventura for Windows with Zenographics' SuperPrint installed. With this configuration,

the same chapter made it through an HP DeskJet + in a little over 3 1/2 minutes.

If you're a full-time graphic artist and work exclusively in the Windows environment, VP for Windows may be a reasonable choice for you. If you want to run Ventura in a multitasking environment with other DOS applications, the GEM version and a 386 work just as easily. (The GEM Ventura can be opened under Windows as a DOS applica-

**Word for Windows is the strongest argument I've seen for starting an all-Windows office. Mouse editing and feature depth are combined in a package that's fun to use. For this program, at least, the wedding of the Mac-like interface to PC macro power is a big success.**

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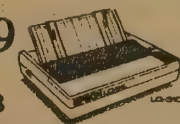
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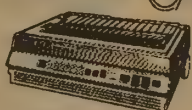
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\*AMI BIOS  
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\*1:1 HD/FD controller  
\*2S/1P/1G port  
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\*64K cache memory  
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\*Teac 1.2MB FDD  
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\*2S/1P/1G port  
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Paradise 1024 VGA 512K OEM.....\$169  
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Video 7 VRAM 256K/512K.....\$389/429  
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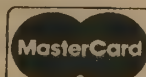
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| 8087-5/8/10 MHz     | \$85/115/145    |
| 80287-6/8/10 MHz    | 125/185/205     |
| 80387-SX16/DX16     | 299             |
| 80387-20/25/33 MHz  | 349/445/555     |
| <b>ITT</b>          |                 |
| 2C87-8/10/12/20 MHz | 185/205/235/265 |
| 3C87-SX16/DX16      | 299             |
| 3C87-20/25/33       | 349/445/555     |

## CHIPS

|                 |        |
|-----------------|--------|
| <b>DRAM</b>     |        |
| 1 Meg x 1-8     | \$4.95 |
| 256K x 4-8      | 5.50   |
| 64K x 4-10      | 2.50   |
| 3C87-8/10/12/15 | 1.50   |
| 64K-10/12/15    | 1.44   |
| <b>SIMM</b>     |        |
| 1 Meg x 9-8/10  | \$53   |
| 1 Meg x 8-10    | 39     |
| 256K x 9-8      | 15     |
| <b>SIPP</b>     |        |
| 1 Meg x 9-8/10  | \$54   |
| 256K x 9-8/10   | 16     |

## PRINTERS

|                                       |          |
|---------------------------------------|----------|
| Citizen GSX 140 (24 Pin)              | \$295    |
| Citizen GSX 200 (9 Pin)               | 185      |
| Color Option                          | 45       |
| Seiko Smart Label (IBM/APPLE)         | 185      |
| <b>PANASONIC</b>                      |          |
| 1180 w/Cable                          | 149      |
| 1191 w/Cable                          | 235      |
| 1124 w/Cable                          | 275      |
| 1624 w/Cable                          | 359      |
| 4420 w/Cable (Rebated)                | 795      |
| Laptop                                | 595      |
| 4450i w/Cable                         | 1195     |
| 4455 w/Cable (Postscript)             | 2095     |
| HP Series II/III                      | 995/1575 |
| Everex Abaton Postscript Laser (3 MB) | 1895     |
| Canon BJ-10e                          | 339      |

## LOGITECH MOUSE

|                      |         |
|----------------------|---------|
| C-9 Serial/Bus       | \$69/75 |
| Serial w/Windows 3.0 | 139     |
| Trackman             | 85      |
| Scanman Plus         | 169     |
| CatchWord Software   | 110     |
| Dexxa Serial Mouse   | 38      |

## DRIVES

|                                  |      |
|----------------------------------|------|
| <b>TEAC</b>                      |      |
| 360K                             | \$60 |
| 3 1/2" 720K w/Frame              | 65   |
| 1.2 MB 5                         | 70   |
| 1.44 MB 3 1/2" w/Frame           | 70   |
| <b>SEAGATE</b>                   |      |
| ST-251-1 28ms 40 MB              | 265  |
| ST-4097 80 MB 28ms               | 565  |
| ST-157A IDE                      | 285  |
| <b>NEC</b>                       |      |
| D3142 40 MB 28ms                 | 325  |
| D5655 150 MB ESDI                | 750  |
| D3661 100 MB ESDI                | 620  |
| <b>MAXTOR</b>                    |      |
| 1140-140 (119) MB 27ms           | 925  |
| 4170-170 (157) MB 14ms ESDI      | 895  |
| 4380-380 (338) MB 16ms ESDI      | 1395 |
| 8760-760 (676) MB 16ms ESDI      | 2095 |
| <b>CONNER</b>                    |      |
| CP-3044 40 MB 25ms               | 335  |
| CP-3184 80 MB 25ms               | 495  |
| CP-3104 100 MB 25ms              | 525  |
| CP-3104 100 MB 25ms              | 875  |
| <b>MICROSCIENCE HH1090 80 MB</b> | 375  |

## POWER SUPPLY

|                             |       |
|-----------------------------|-------|
| 150 W for XT                | \$45  |
| 200 W for Baby AT           | 60    |
| 200/220 W For AT            | 60/65 |
| 220W For Tower              | 78    |
| Hard Disk Drive Casing 65 W | 95    |
| 330 W (UPS)                 | 199   |
| 500 W (UPS)                 | 399   |
| 1200 W (UPS)                | 899   |

## DTK CARD

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|-------------------------------------|------|
| Monographic w/Printer               | \$38 |
| 640K RAM Card (XT)                  | 35   |
| Hexa I/O (2S,PG,Ck,Cont)            | 48   |
| Penta I/O (2S,PG,Ck)                | 39   |
| AT I/O (2S,PG)                      | 35   |
| Mini AT I/O (2S/P)                  | 30   |
| Serial Card (XT)                    | 19   |
| Printer Card                        | 19   |
| Game Card                           | 19   |
| Controller (see controller section) |      |

## MICROSOFT

|                                   |      |
|-----------------------------------|------|
| DOS 3.3                           | \$60 |
| DOS 4.0i                          | 60   |
| Learning DOS                      | 35   |
| Serial Mouse 200 ppi              | 69   |
| Mouse Bus/Serial 400 dpi          | 99   |
| Mouse w/Printbrush                | 105  |
| Mouse w/Window 3.0                | 157  |
| NEW! Window 3.0                   | 89   |
| Word                              | 207  |
| Word for Windows                  | 315  |
| Works                             | 99   |
| Power Paint for Windows           | 315  |
| Excel for Window                  | 292  |
| Flight Simulator                  | 45   |
| OS/2 Present Tool Kit             | 339  |
| Software Development Kit          | 319  |
| Microsoft C                       | 319  |
| Computer Books (see Book Section) |      |

## VGA & EGA CARDS

|                                    |           |
|------------------------------------|-----------|
| <b>All VGA Cards Come 1024x768</b> |           |
| ATI Wonder 256K/512K               | \$175/195 |
| ATI w/Mouse                        | Add 40    |
| Paradise Plus 256K/512K            | 205/230   |
| Everex View Perfect 256K/512K      | 165/185   |
| Genoa 256K 6300/6400               | 145/165   |
| Video 7 1024i/512                  | 185/220   |
| Orchid ProDesign 256/512           | 195/220   |
| Generic VGA 256/512K               | 115/135   |
| Video 7 VRAM 512K                  | 399       |
| Orchid ProDesign II 512K/1MB       | 265/285   |

## BOOKS

|                       |  |
|-----------------------|--|
| Too Many To Be Listed |  |
| MacGraw-Hill Press    |  |
| Microsoft Press       |  |
| Peachpit Press        |  |
| (Desktop Publishing)  |  |
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## KEYBOARDS

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|------------------|-------|
| <b>NORTHGATE</b> |       |
| OMNI             |       |
| Ultra            | \$119 |
| PLUS             | 99    |
| 102              | 79    |
| 101i             | 69    |
| 101N             | 69    |
| MAXI 101         | 50    |
| KEYTRONIC 101    | 50    |
| MITSUMI 101      | 45    |

## CASES

|                       |      |
|-----------------------|------|
| AT Jr Case for XT     | \$30 |
| Baby AT               | 50   |
| AT Case               | 55   |
| Baby Tower w/Power    | 125  |
| Baby Tower (Mid)      | 155  |
| Tower AT w/220W Power | 185  |

## MOTHERBOARD

|                     |          |
|---------------------|----------|
| <b>DTK</b>          |          |
| 8086 XT-10          | \$69     |
| 286 10/12           | 150/180  |
| 386SX-16/20         | 355/495  |
| 386-25/33           | 895/1195 |
| <b>ECS</b>          |          |
| Non-DTK VLSI 286-12 | 125      |
| Non-DTK VLSI 286-16 | 185      |
| 386SX-16            | 345      |
| 386 (64K Cache)-33  | 950      |
| 386 (no cache)-25   | 660      |
| <b>MICRONICS</b>    |          |
| 486 Cache-25        | 2575     |
| 386 Cache 33/25     | 1195/995 |

## CONTROLLER CARD

|                                |             |
|--------------------------------|-------------|
| DTK Floppy Controller Card     | \$18        |
| DTK Control 12 & 144 (XT, AT)  | 40          |
| Western Digital XT Gen Card    | 55          |
| Western Digital XT RLL         | 65          |
| Western Digital H/F 1003V      | 99          |
| Western Digital 1:1 1006V      | 119         |
| Western Digital 1:1 1006SR RLL | 135         |
| DTC 5280 2:1                   | 85          |
| DTC 1:1 RLL 7387               | 105         |
| DTC 6280 ESDI 1:1              | 155         |
| Adaptec 2322B ESDI 1:1         | 195         |
| W.D. 1007 SE2 ESDI             | 175         |
| Future Domain SCSI Controller  |             |
| TMC1660                        | 165/295 kit |
| TMC1680                        | 195/315 kit |
| TMC885 for AT                  | 145/265 kit |
| TMC860 for AT (H only)         | 125/195 kit |
| TMC875 for XT (F&H)            | 135/215 kit |
| TMC850 for XT (H only)         | 85/145 kit  |

## MONITORS

|                               |       |
|-------------------------------|-------|
| <b>ADI</b>                    |       |
| 14" mono/paper white/amber    | \$119 |
| 14" VGA mono                  | 125   |
| 14" VGA (640x480) .31         | 325   |
| 14" VGA (1024x768) .28        | 375   |
| Hyundai mono                  | 70    |
| <b>MITSUBISHI</b>             |       |
| HA3905 (1024x768) 20"         | 1550  |
| HJ6905 (1280x1024) 20"        | 1795  |
| HL6605 (1280x1024) 16"        | 1095  |
| <b>NEC</b>                    |       |
| 5D (1280x1024) 20"            | 2255  |
| 4D (1024x768) Non-Int         | 1175  |
| 3D (1024x768) 14"             | 595   |
| 2D (800x600) 14"              | 455   |
| <b>PANASONIC</b>              |       |
| 1381 (1024x768) 28"           | 395   |
| RELISYS Multiscan 15" Non-Int |       |
| 1024x768 .31                  | 595   |
| <b>QUIME</b>                  |       |
| 835 (1024x768) 28"            | 375   |
| 830 (640x460)                 | 295   |
| <b>SEIKO</b>                  |       |
| CM1440 (1024x768) 26"         | 495   |
| CM1450 (1024x768) Non-Int 26" | 645   |
| SONY 1304 (1024x768) Non-Int  | 675   |
| ViewPerfect 3 (1024x768)      | 455   |
| ViewPerfect 2 (800x600)       | 325   |

## OTHER SOFTWARE

|                                      |                |
|--------------------------------------|----------------|
| Desq View 286 2.2                    | \$79           |
| Desq View 386 2.2                    | 141            |
| Desq Vand Graphics                   | 285            |
| Lotus 123 Rel 3                      | 335            |
| Norton Commander v3.0                | 89             |
| Norton Utility (Advan)               | 85             |
| Pacific Data                         | See Other Page |
| PageMaker                            | 475            |
| Word Perfect 5.1                     | 245            |
| Wordstar 6.0                         | 250            |
| Xerox Ventura 2.0                    | 519            |
| Davidson Education                   | 39 & Under     |
| Software Source (Public Domain)      | 3              |
| SCO Xenix 386                        | 439            |
| Personal Lawyer                      | 55             |
| Lifestyles (Legal)                   | 55             |
| Individual Learning Software         |                |
| Teaching Software Tape               | 19             |
| Adobe Postscript for HPIL            | 299            |
| P2 Tool 6.0                          | 89             |
| Laplink Release III                  | 99             |
| Grammatik IV                         | 59             |
| <b>WORDPERFECT</b>                   |                |
| WordPerfect 5.1                      | 245            |
| Draw Perfect                         | 265            |
| Letter Perfect                       | 135            |
| Plan Perfect                         | 265            |
| Executive Perfect                    | 145            |
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|                                   |             |
|-----------------------------------|-------------|
| Slotless Clock Chip               | \$24        |
| Pelican Print Ribbons             | All Models  |
| HP Laser IIP Toner                | 75          |
| HP Laser II, III Toner            | 85          |
| JetWare HP Accessories            | Best Prices |
| BTC Bar Code reader               | 295         |
| Teaching Software Video Tape      | 16          |
| Summa Sketch II Digital Digitizer | 340         |
| HP Laser Printer II               | 995         |
| Adobe Postscript Cartridge HPIL   | 299         |
| Sound Blaster                     | 165         |
| Colorado Tape DJ-10               | 265         |
| Toshiba T1000 SE/XE               |             |
| 1 MB Card (Hatten)                | 250         |
| 2 MB Card                         | 360         |

## BATTERIES

|                |        |
|----------------|--------|
| Lithium        | \$1.95 |
| IBM Compatible | 9.95   |
| PS/2           | 12.95  |

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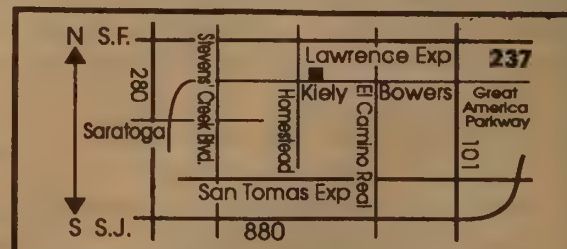
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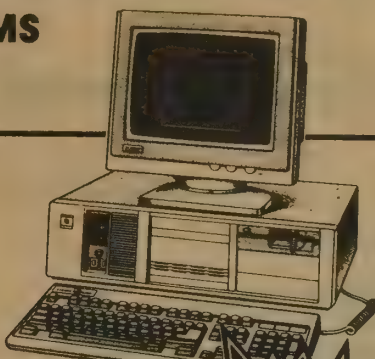
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| RAM 3000 Deluxe (AT 3 MB, EMS) | 84  |
| RAM 10000 (AT 10 MB, EMS)      | 125 |
| RAM 8000 (AT 8 MB EMS)         | 165 |
| RAM II 4000 (PS/2-5.6,7.80)    | 245 |
| Magic I/O XT (1-2S/1P/Clock)   | 45  |
| Magic I/O AT (1-2S/1P)         | 49  |
| 2nd or 3rd Serial Kit          | 19  |

## MODEMS & FAX

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|--------------------------------|---------|
| Evercom II (1200 Baud Int)     | 53      |
| Evercom 2400 Baud Int/MNP5     | 115/145 |
| Evercom 2400 Baud Ext/MNP5     | 185     |
| Fax Modem Int 2400/9600 w/MNP5 | 239     |

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|------------------------------------------------------------------|---------|
| Evergraphics (mono w/P 132x44 Display)                           | 59      |
| Fontview (12 font on 1 screen)                                   | 125     |
| Micro Enhancer (EGA)                                             | 79      |
| Micro Enh. Deluxe (EGA w/P)                                      | 85      |
| Everex 8-Bit VGA                                                 | 115     |
| Viewpoint (VGA 1024x768)/512K                                    | 165/185 |
| Postscript Laser Printer Abaton (3 MB, S, P, Appletalk, 6 Pages) | 1955    |

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| EV-348 HD/FD ESDI Controller 1:1 | 145 |

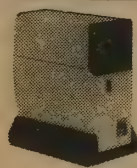
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| 40 MB AT Floppy (DC2000)                | 245       |
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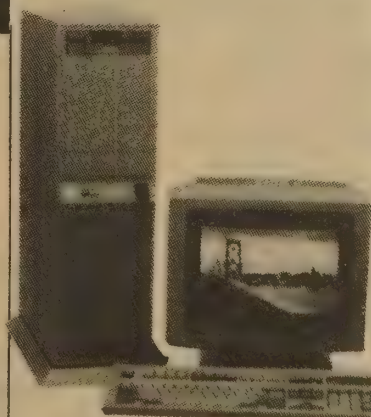
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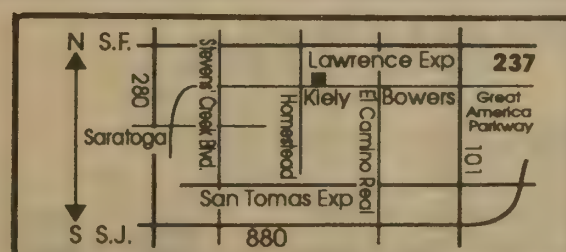
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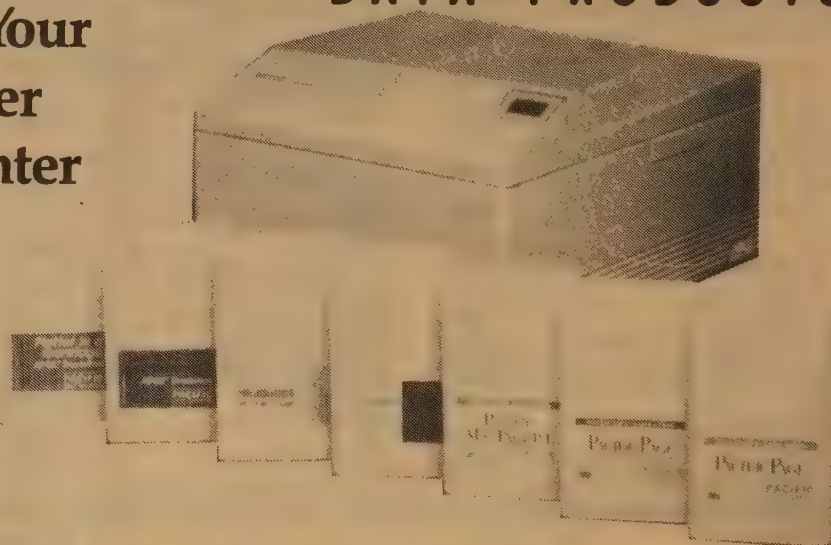




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| 010358 | Page & Memory               | Postscript & 2MB              | HP II                                                                                 | \$389                                                    |
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| CE280  | Pacific MacPage             | Postscript Language For Apple | HP II w/Apple                                                                         | \$425                                                    |
| CE290  | Pacific MacPage P.E.™       | Postscript Language           | HP IIP, IID, III w/Apple                                                              | \$395                                                    |
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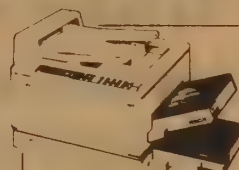
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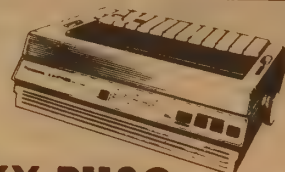
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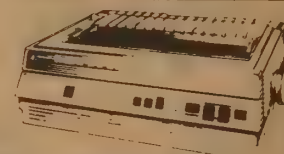
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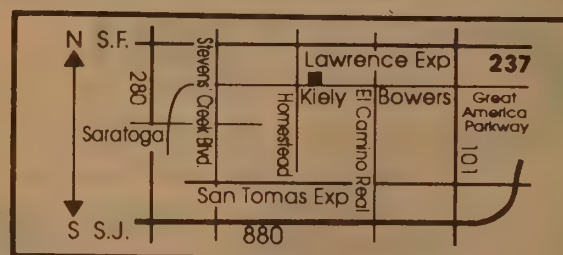
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tion.) Upgrade for registered users of VP 2.0 to the Windows version is \$195. Upgrade from the Professional Extension to the new GEM version is only \$80.

More than other Windows 3 applications, VP for Windows requires a powerful hardware base. Plan on a minimum of 4MB of add-on memory, and nothing less than a 20MHz 386 if you want the program to run smoothly.

## SCRAPBOOK+

Scrapbook+ enhances the Windows clipboard by letting you save or display custom image libraries. You can select text, bitmap or vector artwork by clicking on a thumbnail of the art you want. Images can be cut, pasted or imported from over thirteen application formats. The image libraries can be cataloged for later retrieval by filetype or by one-line description.

Scrapbook+ has features comparable to several Macintosh desk accessories rolled into one. Writers of Windows-related documentation will appreciate the selective screen-capture utility. Both lasso and square marquee tools are included to snip out bitmapped portions of the clipboard. The camera tool will copy portions of the screen from any application. Scrapbook+ can be set to capture entire Windows screens, active windows, or only the client area of a window. Screenshots can grab pull-down menus within an application.

Text, bitmaps and vector art can be pasted into an image library or exported to disk files. The original image format can be preserved, or the file can be written to an internal Windows format (BMP, WMF). The program works with black-and-white or color images (no support yet for color TIFF files). Grayscale EPS, TIFF and PCX files are shown as black and white on the screen, but retain their original information when printed.

Working with text, Scrapbook+ allows data from spreadsheet and database programs to be copied/imported/exported in comma-separated, DIF and SYLK formats. This feature can be used to facilitate the transfer of tabular information to or from DOS applications. Text from a Windows word processor can be captured in Microsoft's Rich Text Format (RTF). RTF preserves font, italics, bold and underlining information and can be read by MS Word on the PC or Mac. When pasted into Scrapbook+, text can also be converted to a bitmap graphic with the camera tool.

The program is not primarily for file

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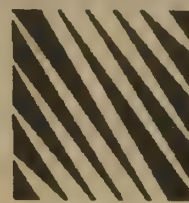
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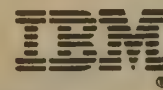


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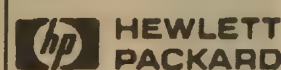
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is stored in the Windows Metafile format. The current version of Scrapbook+ retains the earlier Windows 64K limit on the size of metafiles, so complex files from Designer and Corel Draw! may be simplified in the translation. The original format of any image can be retained inside of an art library. If it's CGM when you import it, you can export it to disk the same way.

Scrapbook+ should be most useful to desktop publishers who deal with quantities of clip art. Individual libraries can be created by content or filetype. Pictures can be retrieved rapidly by thumbnail or description-search. Version 2.10 of Scrapbook+ is fully compatible with all versions of Windows from 2.0-3.0. Users of previous Scrapbook versions can upgrade to v2.10 for \$30. A discount offer to purchase Windows 3 for \$50 is included in the package.

Mac package, the other, Unicom, from the PC shareware world.

The manuals for MicroPhone are attractively laid out, and appear to be oriented to the telecommunications novice, with emphasis on the benefits of subscribing to commercial information services. The user tutorial has a large section devoted to navigating CompuServe.

On the Macintosh, MicroPhone is generally recognized as a state-of-the-art program which offers users the latest file transfer and script options. MicroPhone for the PC is based on the Mac-like principle of shielding users from the everyday nuts and bolts of telecommunication. This has occasioned some design decisions which go against the instincts of current heavy-duty users.

The first thing I wanted to know from the reference manual was how to transfer my dialing directory from Procomm. I found out that MicroPhone doesn't use a dialing directory, per se. The names of services appear on a pulldown menu with no obvious way to set up a dialing queue. The Micro-

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**If you're a full-time graphic artist and work exclusively in the Windows environment, Ventura Publisher for Windows may be a reasonable choice for you. If you want to run Ventura in a multitasking environment with other DOS applications, the GEM version and a 386 work just as easily.**

Phone installation program just copies its files to the hard disk. It doesn't ask which serial port to use or what kind of modem is

installed. COM1 and generic Hayes at 1200 baud are assumed as defaults.

The authors of MicroPhone apparently didn't check out programs like Procomm, Telemate or QMODEM for their user-friendly features. Everything not 100% vanilla in MicroPhone is done through a series of script commands. No dialing directory, no rotary queue, and no quick way to set up modem defaults. Instead of just pointing at four numbers on a directory to dial them in succession, MicroPhone makes you construct a special "Gang Dialing Script".

When dialing with MicroPhone's generic setup, I discovered that my modem was pausing for long intervals between each digit. The program also cut short the acknowledgment tone for a BBS with a finicky HST 9600 modem. Not really MicroPhone's fault—most PC programs let you correct these things by changing the modem initialization string, or inserting commas after the number on the dialing directory. A search of the menus and manuals yielded no direct information about how to do this in MicroPhone. A call to technical support

taught me to change the parameters by creating a custom modem driver script.

The preset log-on scripts installed by MicroPhone should be adequate to connect and display screen information for commercial services on a generic Hayes modem. The script for CompuServe will do a lot more, if it matches your modem type. Custom files are supplied for less-than-Hayes-compatible modems, but you may have to do some editing to combine the defaults with the log-in scripts for the services.

MicroPhone's script language includes a fair number of commands and options, but installing and fine-tuning is not intuitive. Communication is supported from 300 to 19,200 bps. Inherent limitations of Windows make background communication at 9600 bps and up a bit iffy, but high speed foreground communication should be error-free. Included file transfer protocols include XMODEM, YMODEM and YMODEM-G. I imagine ZMODEM could be run under Windows as a separate module, but MicroPhone has no built-in support for external file protocols. MicroPhone includes a MiniBBS script

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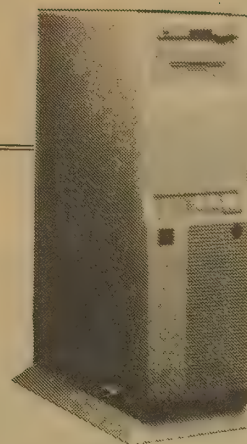
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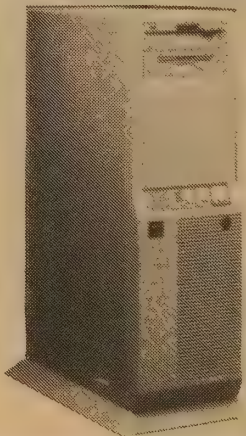


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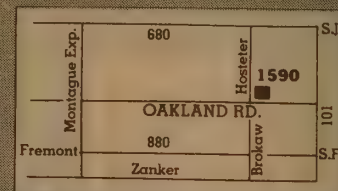
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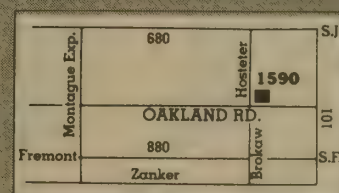
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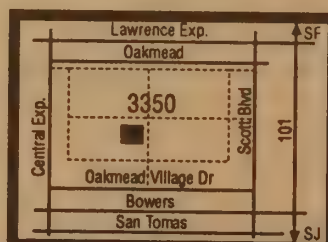
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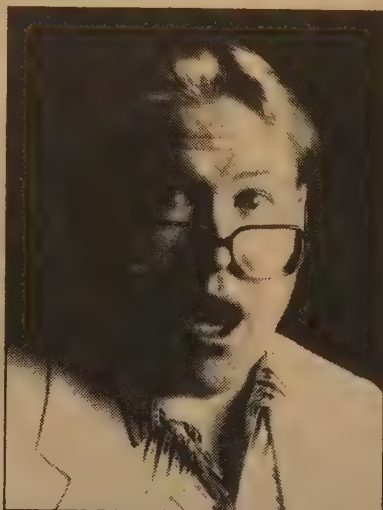
which allows users to call you, leave messages, upload and download files.

MicroPhone makes good use of the Windows environment. You can cut, paste and backscroll text with the mouse. You can work in another program while waiting to connect or transferring files. If you can learn it, the script language will give you the ability to customize the MicroPhone interface and set up automated procedures. Script buttons can be installed to do everything for users who don't want to know the theory behind it all. Software Ventures' BBS has a large library of Macintosh scripts which can be ported to the PC version. The company is working on a new PC-release which will have more file transfer protocols, and a larger library of user-friendly scripts.

Unicom is a Windows telecommunication program written with full cognizance of what hardcore PC users like and demand from their software. It has a full complement of transfer protocols, including YMODEM, KERMIT, ZMODEM, and COMPUSERVE B. The dialing directory is an ASCII file which can stay open in its own window, showing complete information for each entry. Numbers can be queued for dialing, and defaults can be altered on the fly. Unicom allows you to modify communications parameters globally or for each individual dialing entry. Keyboard macros can be recorded and invoked automatically by clicking the mouse on the function buttons at the bottom of the screen. Multiple copies of the program can even be opened to run from different serial ports. Like MicroPhone, Unicom has a "miniBBS" host mode and script language to automate log-ons, and file transfers. Since Unicom is shareware, you will be confronted with a series of information and advertising screens until you register your copy, but the trial version is completely functional.

### NEXT...

Word processing, database management, desktop publishing and telecommunications—there are state-of-the-art applications for Windows in most areas of personal computing. In the next article, we'll look at Windows as a multitasker, and evaluate some third-party enhancements to the basic Windows operating environment. ■



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phosphor  
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dot pitch, dark tint, non-glare CRT, XE, phosphor  
Input signal: Video signal, Analog 0.7V p.p/75  
positive RGB direct drive  
Sync signal: Horizontal and vertical sync. TTL level  
Polarity: scan line Horizontal Vertical  
640 x 350 + -  
720 x 400 - +  
640 x 480 - -  
800 x 600 +, - +, -  
1024 x 768 +, - +, -

Frequencies:  
Horizontal 31.46KHz 35.16KHz 35.52KHz  
Vertical 60Hz, 70Hz, 56Hz, 87Hz (Interface)  
Bandwidth: 50MHz (-3dB)  
Misconvergence: center 0.3... max.  
corner 0.5mm max.  
Operator control: power on/off, contrast,  
brightness, H-phase-1, H-phase-2  
unlimited  
Display color: AC 90-130V/180-250V  
Power source: manual switch, 50/60Hz  
Power Consumption: 70W max  
Environmental: operating temperature: 0 - 40 C  
Weight: net 12.5Kgs, gross 14.5Kgs  
Load for 20/40 feet container: 320/640 pcs.

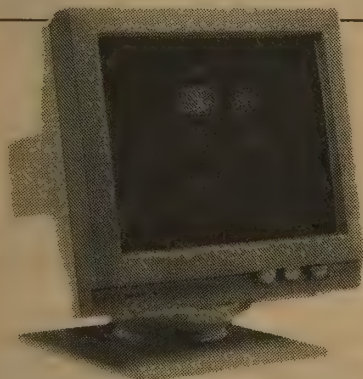


EGA, Dual Frequency - 1461

- Resolution -  
EGA mode: 640 x 350  
CGA mode: 640 x 200
- 2-Year Limited Warranty.
- One-Year Replacement  
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SE-1461: 14" EGA color monitor, dual frequency  
Picture tube: 14" 0.31mm dot pitch, B22 tintglass,  
tint/non-glare screen  
Input signal: video TTL positive,  
CGA mode: RGBI TTL positive  
EGA mode: RR', GG', BB' TTL positive  
Sync: (CGA) H: TTL positive V: TTL positive  
(EGA) H: TTL positive V: TTL negative  
Input connector: 9 pin D-type connector  
Scan frequency: H: 15.75KHz (CGA) mode  
H: 21.85KHz (EGA) mode  
V: 60Hz  
Display area: H: 250 +/- 3mm, V: 170 +/- 3mm  
Bandwidth: 30MHz  
Resolution: CGA mode: 640 x 200  
EGA mode: 640 x 350  
Operator control: power on/off, contrast, brightness  
(external) H-phase 1, H-phase 2, V-center (external)

Display colors: 16 colors (CGA) mode,  
64 colors (EGA) mode  
Display format: 80 ch x 25 row  
CGA mode, 7x7 dots matrix, 8x14 dots blocks  
EGA mode, 7x9 dots matrix, 8x14 dots blocks  
Misconvergence: center, 0.3mm max,  
corner, 0.5mm max  
Power source: 110V/60Hz, 220/50Hz  
Power consumption: 60W max  
Ergonomics: tilt & swivel base  
Tilting range: -5 degrees to +15 degrees  
Rotating range: 360 degrees  
Dimensions: 465 (L) x 443 (W) x 444 (H)mm  
(18.3 x 17.5 x 17.5 inches)  
Weight: net 11.5Kgs, gross 13.5Kgs  
Measurement: 3.3 cub/feet  
Load for 20/40 feet container: 325/650 pcs



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Picture tube: 14", 90°, non-glare tinted flat square  
Input signal: video-TTL positive  
Sync: H: positive, V: positive/negative  
Input connector: 9 pin D-type  
Scanning frequency: H: 18.432KHz (MGA mode)  
H: 15.75KHz (CGA mode)  
V: 44-74Hz  
Display area: H: 233 +/- 3mm, V: 173 +/- 3mm  
Bandwidth: 20MHz (-3dB)  
Resolution: 720 dots x 350 lines  
Operator control: Power on/off, contrast, brightness  
(external) sub-brightness, focus (external)

Display colors: monochrome (amber: P39,  
paper white: H8,  
Greenish yellow: H47)  
Display format: 80 ch x 25 rows  
Power source: 110/220 VAC, 60/50 Hz  
Power consumption: 30W max  
Ergonomics: tilt & swivel base  
Tilting range: 5 degrees to +15 degrees  
Rotating range: 360 degrees  
Dimensions: 327 (L) x 325 (W) x 315 (H)mm  
(or 12.9 x 12.8 x 12.4 inches)  
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Measurement: 2.2 cub/feet  
Load for 20/40 feet container: 500/1,000 pcs

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# Keyboards For The Laptop User

BY ED  
KAHN

These days many vendors are offering keyboards designed to really meet the varied needs of users. Recently I've found two excellent offerings, particularly well suited to laptop users who want to leave keyboards at several locations.

Keyboard preference is really personal. No matter what the layout, tactile response is really a matter of individual preference. I like a keyboard that is snappy. In many ways, I like the feel of a standard IBM keyboard as well as any of the competition, but I don't like the layout.

Two keyboards that have the feel I like plus lots of nifty features are the Northgate OmniKey Ultra and the Datadesk Switchboard. Either of these will serve you well. They are both well made and carefully thought out.

Which is right for you depends mostly upon your application.

## NORTHGATE'S OMNIKEY ULTRA

In the past, only the Northgate keyboard could get my full and unconditional recommendation. The Northgate is certainly the most deluxe of conventional keyboards. For word processing, it can't be beat. It has many features that have won the praise of computer users. It has just the feel I love. Its layout and innovative design set it apart from the competition.

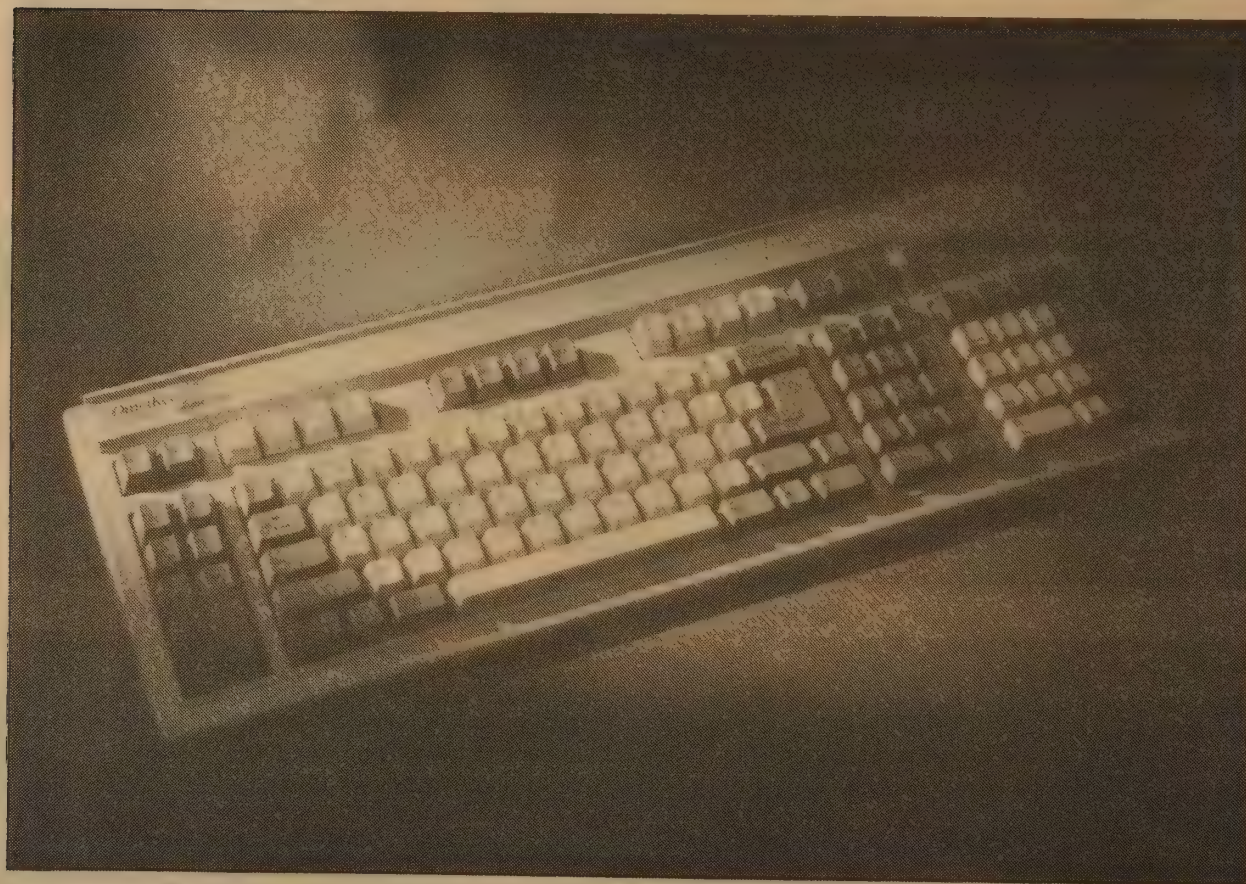
The newest model of the Northgate keyboard is the OmniKey Ultra (\$149.00). You order it through the mail, but they do have an 800 number, and if you don't like the key-

board you can return it for a full refund within thirty days, so there's little risk. In addition to the basic typewriter keyboard layout, there are two numeric keypads, one devoted to the numbers and the other to cursor movement. I find this a wonderful layout. I always prefer to use cursor keys on the numeric keypad to other alternatives. On the OmniKey Ultra, you don't have to choose between having full cursor control on the keypad and the use of the keypad itself. You have both.

Northgate incorporates other advanced design features as well. You don't have to choose between having the function keys across the top or along the left side. Instead, Northgate provides both. The twelve function keys along the left side of the keyboard are much like those on the early PCs. Function keys 11 and 12 are spaced above the familiar ten function keys, so the templates of many software packages will still fit conveniently over the ten keys. Across the top is another row of twelve function keys. As the keyboard comes from the factory, these function keys are set up as shifted function keys. This means that if you need to hit Shifted F4, you merely hit F4 on the top row and it is done. Dip switches allow you to change these keys to Alt + the function key or Control + the function key. If you want, you can also set them up as unshifted function keys.

A button on the back side of the keyboard, essentially a Control-Alt-Delete button, does a warm boot for you. And finally, the board has a toggle that allows you to set your keyboard up so that a shifted period or comma will still give you the period or comma rather than the "<" or ">" keys.

If your portable will let you add a full keyboard, check this one out.



Northgate's OmniKey Ultra is a favorite for laptop and desktop use.

## THE DATADESK SWITCHBOARD

They used to say that if you built a better mousetrap the world would beat a path to your doorstep. Now it seems that if you build a better mouse, computer users will beat a path to your factory. Datadesk has just taken a step in the right direction by designing a keyboard completely unlike anything previ-



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- 101 Keyboard
- Case w/Power Supply

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- Intel 25 MHz CPU, 64 Cache
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- Serial, Parallel, Game Port
- 101 Keyboard
- Teac 1.2 MB or 1.44 MB Floppy Drive
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## 386-25 MHz SYSTEM

- Intel 25 MHz CPU
- 1 MB RAM on Board
- Hard/Floppy Controller (1:1)
- Teac 1.2 MB or 1.44 MB Floppy Drive
- Serial, Parallel, Game Port
- 101 Keyboard
- Case w/Power Supply

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## 386-SX 16 MHz SYSTEM

- Intel 386-SX CPU
- 1 MB RAM on Board Landmark=21.6
- Hard/Floppy Controller (1:1)
- Teac 1.2 MB Floppy
- Serial, Parallel, Game Port
- 101 Keyboard
- Case w/Power Supply

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- 101 Keyboard
- Case w/Power Supply

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| 286 8/20 MHz 0 Wait           | 340 |
| 386SX-16 MHz 0 Wait           | 370 |
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| 386-33 MHz 64K Cache (w. CPU) | 790 |

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| CP-3104 IDE 100 MB             | 520 |
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| Genoa Super VGA 6300/6400         | 164/184 |
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| DTC 7287 RLL Contrl (1:1 inter)     | 95  |
| DTC 6280 ESDI Contrl (1:1 inter)    | 140 |
| DTC 3280D SCSI Contrl (1:1 inter)   | 149 |
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| 1.2/1.44 Floppy Controller          | 17  |
| Four Floppy Controller              | 45  |
| XT Hard Disk Controller             | 48  |
| AT/IO (2S/1P/1G)                    | 25  |
| RS-232 Card                         | 17  |
| Printer Card                        | 18  |
| Game Card                           | 16  |
| Clock Card                          | 16  |

## KEYBOARD

|                   |    |
|-------------------|----|
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| Monterey 101 Key  | 47 |
| 101 Key AT/XT     | 38 |

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|                                 |       |
|---------------------------------|-------|
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| Big Vertical w. Power Supply    | 159   |
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| Power Supply AT 230w/XT 150w    | 49/36 |

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| 387-33                    | Call    |
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| Logitech Mouse            | 65      |
| Hi-Res Mouse              | 38      |
| DFI Scanner               | 175     |
| 9600 Fax Modem            | 249     |
| 2400 Internal Modem       | 79      |
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| Printer Cable 6/9'        | 9/19    |
| Keyboard Extension Cable  | 6       |
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ously on the market—a modular keyboard that will work with all computers: PCs, Macs, PS/2s and anything else in between. And it has an optional trackball.

Datadesk learned a lot from Northgate and incorporated many of the OmniKey's best design features, but they made it into a highly flexible package with unequaled versatility. The basic keyboard has a typewriter keypad, cursor control keys, and a numeric keypad that can be shifted to work as a cursor control pad. But each of these three elements is removable and can be repositioned in any order you like. If you're left handed, for instance, you might want to put the numeric keypad to the left, have the letter keys in the center, and place the cursor control keys to the right side of the keyboard. All of this sounds pretty standard, but it offers the opportunity to set things up just the way you want. Now comes the fun.

Datadesk has also designed lots of other modules you can use in place of or in addition to these standard modules. The basic keyboard retails for \$239.95. It comes with an

assortment of cables that allow you to connect it to any computer.

You can replace the cursor control keypad module with a high resolution trackball module (\$149.95) that also includes the cursor control arrows. This is a mouse substitute device that works off of a standard Microsoft mouse driver and operates through a serial port. With the advent of Windows, I suspect this will become a really popular option. It eliminates the need for a separate pointing device as well as the requirement for a lot of clear desk space. You can run Windows a lot more conveniently, without having to take your hands off the keyboard. A lot of the objections to a mouse are eliminated with this device.

Another module is a vertical function keypad that you can install to the left of the typewriter keys. For those of us who still prefer the function keys to the left, this is an essential module. If you find that too many of the modules appeal to your notion of a perfect keyboard, you can add additional modules to either the left or right of the existing

**On the OmniKey Ultra, you don't have to choose between having full cursor control on the keypad and the use of the keypad itself. You have both.**

housing. These other modules just snap in place and increase the overall size of the keyboard.

While this setup is not inexpensive, it certainly gives you a range of options that no other keyboard offers. It goes without saying that I like the feel of this keyboard. It is considerably different from that on earlier Datadesk models. If it suits your needs, it is worth checking out. It is well made and comes with a three-year warranty. ■

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- 486 EISA SERVERS
- WORKSTATIONS
- NETWORK SOFTWARE UPDATES
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- SERVICE
- COMPLIMENTARY NETWORK CONSULTING

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Each Server has a **Mylex 32 Bit EISA Bus Motherboard, Ethernet Card and a 4 MB Cache SCSI Disk Controller**. It is built in a Full Tower Case with 300 Watt Power Supply, 300 MB SCSI Conner Drive, 150 MB Archive Tape, 2S/1P/1G Port, and a 101 Key Keyboard.

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|----------|------------|----------|------------|
| 11 MIPS  | 11.9 MIPS  | 14 MIPS  | 14.9 MIPS  |
| 486-25   | 486-25     | 486-33   | 486-33     |
| NO CACHE | 128K CACHE | NO CACHE | 128K CACHE |

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|                                 |                      |       |
|---------------------------------|----------------------|-------|
| Include                         | 286-12 .....         | \$635 |
| 1 MB RAM                        | 386SX .....          | 860   |
| 42 MB Hard Drive                | 386-20 .....         | 1150  |
| 101 Keyboard                    | 386-25 .....         | 1210  |
| 1.2 or 1.44 Teac FDD            | 386-25 w/Cache ..... | 1310  |
| 2 Serial/1 Parallel/1 Game Port | 386-33 w/Cache ..... | 1400  |
| Case/Power Supply               | 486-25 w/Cache ..... | 2890  |

ADD: \$85 for Mono Display/\$395 for VGA Display (Card & Monitor)

WORKSTATION: 486-25 w/128K Cache Mylex Motherboard ... \$11,800

## PERIPHERALS

12" MONO MONITOR ..... \$61

**MOTHERBOARDS:** 286-12—\$120, 386-20—\$595,

386-25C—\$800, 386-33C—\$900, 486-25—\$2200.

**VIDEO CARDS:** VGA—\$85, MGP—\$23

**CASES:** ..... Baby AT—\$85,

Tower-Full—\$190, Mini—\$112

**MONITORS:** 14" Mono—\$105, VGA—\$315/350

Drives w/Adapter

40 MB W.D. IDE ..... \$265

Conner 100/200 MB IDE ..... \$499/\$825

1.2 or 1.44 MB FD ..... \$64.

**KEYBOARDS:** ..... 101 Key—\$38, 84 Key—\$28

**SIMM/SIPP:** ..... 256K-8—\$16, 1 Meg-8—\$52

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80 MB HD  
1.2 MB FD  
Mono. Monitor  
Mono. Card  
I/O Card  
Novell ELS-2

3-Work Stations: 286 12 MHz  
640K Ram  
1-FD  
Mono. System

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### CAD WORKSTATION

• AMI 386-33 MHz, 1.2 MB FD  
1.44 FD 64K Cache  
• 4 MB Ram  
• 150 MB Tape B/U  
• 150 MB ESDI Drive  
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• Hitachi 19" 1024x768 Monitor

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### PLOTTERS

CalComp: 1023 A-D .....\$3675  
1025 A-E .....4775  
1044 GT AE .....9050  
Houston Inst.: Dmp-61 .....2975  
Dmp-62 .....3975  
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### PRINTERS

Okidata 320 .....\$340  
Okidata 321 .....455  
Okidata 390 .....475  
Okidata 391 .....632  
Star NX1000 .....189  
Star NX1000C .....235  
StarNR 2410 .....425

Panasonic 1124 .....\$257  
Panasonic 1624 .....365  
Panasonic 1524 .....365  
Diconix 150 Plus .....335  
NEC 6200 .....478  
NEC 6300 .....648  
NEC 2200 .....289

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### LASER PRINTERS

NEC, HP, PANASONIC, TOSHIBA, QMS, QUME,  
APPLE  
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### DIGITIZERS

Summa Sketch 12x12 .....\$331  
Summa Sketch 12x18 .....620  
Cal Comp 12x12 .....321  
Kurta IS/ONE 12x12 .....349  
Kurta IS/ONE 12x17 .....595

### MONITORS

Hitachi 19" .....\$1750  
NEC 5D 19" .....2185  
NEC 4D .....1225  
Nanao 9070S .....990  
Nanao 9070U .....1190  
Mitsubishi - All Models .....CALL

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### AMI 385-25 MHz MK III 486-UPGRADE

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• 80 MB HD, 1.2 MB FD  
• VGA Card and Monitor

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### WORK STATION

• Mylex 386 SX  
• 2 MB Memory  
• 40 MB HD, 1.2 MH FD  
• VGA Card and Monitor

**\$1295**

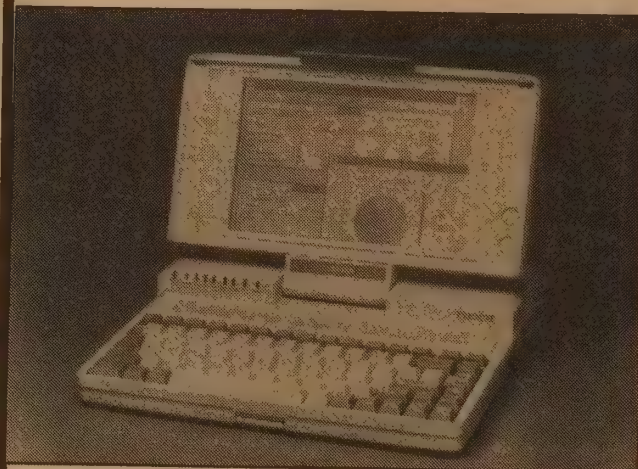
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## BUSINESS SOLUTIONS

### Computer Of The Month:



## The Toshiba T1200XE

Toshiba's latest  
notebook computer  
offers power and  
handy features.

Toshiba has long been known for innovative design and expert craftsmanship in portable computers. Their T1200XE is no disappointment. Weighing 7.9 lbs., with overall dimensions of approximately 12" x 11" x 2", this notebook computer packs a lot of power. It is run by an 80286 CPU clipping along at either 6 or 12MHz. It includes both a high density 3.5" floppy drive and a 20Mb internal hard disk. The 9" diagonal screen offers a crisp blue on silver image.

The keyboard has an excellent layout—something we can always count on from Toshiba. Although there is an embedded numeric keypad, there are standalone keys for Home, Page Up, Page Down, and End. The keys have a nice feel; while they don't offer a full travel, they are more than adequate.

This powerful small unit has a lot of features you'll love. A couple of keys will bring you to a pop-up window with many choices about the configuration of the machine and a display showing just how much power you have left in the rechargeable battery pack. This is convenient.

Another especially handy feature is a resume option, which lets you turn off the computer in the middle of an application; when you turn the computer back on, you'll be in exactly the same place. This is a fabulous time saver. It is convenient for everyday use because you do not have to wait for the system to reinitialize itself and load memory resident programs, drivers, and all of the other things which you have in your config.sys and autoexec.bat files.

Toshiba has built a powerful computer in this small package. It comes with 1Mb of RAM, but is expandable to 5Mb. This high memory can be configured any way you want it—RAM disks, extended, or expanded memory.

The battery arrangements in the T1200XE are sophisticated. There are actually three different batteries. In addition to the rechargeable, there is one for the internal clock. A third battery stores what is in mem-

ory if you use the resume feature. It also kicks in if the rechargeable batteries run down. A safety feature automatically shuts the machine down and saves what's in memory if your rechargeable battery runs too low and you don't save and power down. This memory battery will recharge itself from the nickel-cadmium batteries or from the AC adapter. It takes as long as eleven hours to fully charge. The rechargeables, on the other hand, are back to full power in a couple of hours.

Toshiba provides excellent documentation. A starting packet clearly labeled *First Time* contains the information you'll need to get started. There's also a set of four booklets detailing the operation of the computer and providing the documentation to DOS 4.01, which is included with the computer. The entire reference manual, as well as the DOS coverage, is also available through a convenient hypertext arrangement, which lets you explore the complete documentation from within the computer itself.

If you need a notebook computer, this one certainly is worth a look. It does not, however, accommodate an external keyboard of your choice. And if you are using an external monitor, you are limited to CGA. These small computers just do not come with VGA capability yet. ■

### RESOURCES:

**OmniKey Ultra Keyboard \$149.00**  
Northgate Computer System  
7075 Flying Cloud Dr.  
Eden Prairie, MN 55344  
(800)526-2446

**Switchboard Keyboard \$239.95**  
Datadesk  
9314 Eton Ave.  
Chatsworth, CA 91311  
(818)998-4200

**Toshiba T1200XE \$3199**  
Toshiba America, Inc.  
9740 Irvine Blvd.  
Irvine, CA 92718  
(800)457-7777



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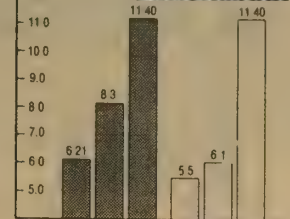
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AS FAST AS NORTHGATE!**

|                                  | 6.21 MIPS       | 8.30 MIPS       | 11.40 MIPS       |
|----------------------------------|-----------------|-----------------|------------------|
|                                  | 25ns Cache      | 20ns Cache      | 20ns Cache       |
|                                  | 386-25 (44 MHz) | 386-33 (59 MHz) | 486-25 (114 MHz) |
| Base System<br>(1 MB, 64K Cache) | <b>\$1195</b>   | <b>\$1395</b>   | <b>\$2995</b>    |

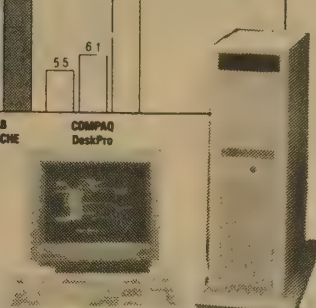
## Advanced Features Includes:

- 64K upgradeable to **256K WRITE BACK Cache!!**
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- AT Baby/Full Size Case
- 220 W Power Supply

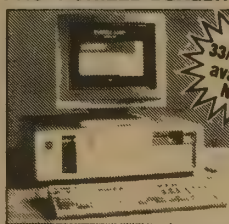
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|------------|--------|
| 386-25 MHz | \$2755 |
| 386-20 MHz | \$2125 |
| 386-SX 16  | \$1575 |
| 286-16 MHz | \$1015 |
| 286-12 MHz | \$945  |

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- Paradise VGA Card 16 Bit

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## AT MOTHERBOARDS

|                    |        |
|--------------------|--------|
| 486/25MHz 64/256K  | \$2795 |
| 386/33MHz 64/256K  | 1150   |
| 386/25MHz 64/256K  | 995    |
| ECS386/25MHz w/CPU | 699    |
| 386SX/16MHz        | 375    |
| 286/12MHz          | 135    |

## HARD & FLOPPY DRIVES

|                                    |       |
|------------------------------------|-------|
| Seagate ST-225 20MB                | \$199 |
| Seagate ST-251-1 40MB              | 299   |
| Seagate ST-4097 80MB               | 565   |
| Western Digital 40 MB w/Controller | 299   |
| Toshiba 44MB 25ms                  | 305   |
| NEC 44 MB 25ms                     | 305   |
| Micropolis 72MB 28ms               | 550   |
| Conner 100 MB IDE 18ms             | 599   |
| NEC 110MB ESDI 18.5ms              | 650   |
| NEC 150MB ESDI 18ms                | 750   |
| Maxtor 150MB ESDI                  | 950   |
| Maxtor 380MB ESDI                  | 1395  |
| Teac 1.2MB                         | 75    |
| Teac 1.44MB                        | 75    |
| Teac 360K                          | 65    |

## CONTROLLER CARDS

|                                     |       |
|-------------------------------------|-------|
| DTC 1:1 RLL 7287AT                  | \$119 |
| DTC 1:1 ESDI 6286                   | 160   |
| Ultrastore ESDI 8K                  | 180   |
| Western Digital Chipset 1:1 MFM     | 73    |
| Everex 1:1 MFM                      | 95    |
| Colorado Int Tape BackUp Controller | 84    |

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## PRINTERS

|                 |       |
|-----------------|-------|
| Panasonic 1180  | \$169 |
| Panasonic 1124  | 285   |
| Panasonic 1624  | 379   |
| HP LaserJet III | 1599  |

## VGA & EGA CARDS

|                            |      |
|----------------------------|------|
| Everex MGA 256K            | \$60 |
| Everex EGA 256K            | 85   |
| Everex VGA Viewpoint 256K  | 167  |
| Video 7 1024i              | 249  |
| Paradise OEM VGA (special) | 92   |
| EGA 256K                   | 81   |
| CGA w/PARA                 | 36   |
| MGA w/PARA                 | 30   |
| OAK VGA                    | 85   |

## MONITORS

|                                |      |
|--------------------------------|------|
| Hyundai Mono Amber 12"         | \$79 |
| Hyundai 14" EGA 640x350        | 319  |
| ViewPerfect 14" 640x480        | 329  |
| Viewsonic Super VGA 14" 1024   | 425  |
| ViewPerfect Multiscan 14" 1024 | 475  |
| NEC 2A 800x600                 | 465  |
| NEC 3D 1024x768                | 635  |

## NETWORK CARDS

|                        |       |
|------------------------|-------|
| Everex Ethernet 8 Bit  | \$169 |
| Everex Ethernet 16 Bit | 265   |
| LANTASTIC Starter Kit  | 399   |
| LANTASTIC 2MB Card     | 215   |
| Ethernet 8 Bit         | 125   |
| Novell 8 Bit NE 1000   | 195   |

## TAPE BACK-UP

|                         |       |
|-------------------------|-------|
| Everex 40MB Floppy Tape | \$269 |
| Everex 60MB Int Cass    | 629   |
| Everex 60MB Ext Cass    | 699   |
| Everex 60MB Int Cart    | 719   |
| Everex 60MB Ext Cart    | 799   |
| Colorado 40/60/120MB    | 299   |
| Colorado Ext Contr Kit  | 125   |

## MEMORY & MULTIFUNCTION CARDS

|                  |      |
|------------------|------|
| Everex RAM 3000  | \$90 |
| Everex RAM 8000  | 269  |
| Everex RAM 10000 | 149  |

## MOUSE

|                                |      |
|--------------------------------|------|
| Logitech Serial                | \$69 |
| Logitech Bus                   | 75   |
| Microsoft Ser/Bus w/Paintbrush | 119  |
| Microsoft Compatible           | 42   |
| Microsoft Mouse w/Windows 3.0  | 159  |

## MODEMS

|                        |       |
|------------------------|-------|
| Everex 2400 Int.       | \$129 |
| Everex 2400 Int w/MNP5 | 179   |
| Int 2400               | 85    |
| Ext 2400               | 109   |

## ADD-ON CARDS

|                  |      |
|------------------|------|
| AT I/O 2S/P/G    | \$35 |
| Serial Card      | 18   |
| Printer Card     | 18   |
| Game Card        | 19   |
| Everex Magic I/O | 59   |

## CASES

|                            |       |
|----------------------------|-------|
| Baby AT 200 W.             | \$105 |
| Tower AT 220 W.            | 180   |
| Full Size AT 230 W/Digital | 110   |

## POWER SUPPLIES

|            |      |
|------------|------|
| 150W XT    | \$45 |
| 220W AT    | 60   |
| 220W AT UL | 69   |

## KEYBOARDS

|                    |      |
|--------------------|------|
| Lite-On 101 Key    | \$45 |
| Maxiswitch 101 Key | 59   |
| OKI Click 101 Key  | 59   |

## MEMORY CHIPS & MATH CO-PROCESSORS

|             |                                  |
|-------------|----------------------------------|
| <b>DRAM</b> |                                  |
| 1MBx1-8/10  | \$6 <sup>00</sup>                |
| 64Kx4-10    | 2 <sup>50</sup>                  |
| 256K-8/10   | 2 <sup>25</sup> /1 <sup>00</sup> |
| 64K-10      | 1 <sup>00</sup>                  |
| 64K-12/15   | 1 <sup>70</sup> /1 <sup>50</sup> |

|             |       |
|-------------|-------|
| <b>SIMM</b> |       |
| 1MBx9-8/10  | 75/73 |
| 256Kx9-8/10 | 23/20 |

|             |       |
|-------------|-------|
| <b>SIPP</b> |       |
| 1MBx9-8/10  | 76/74 |
| 256Kx9-8/10 | 24/21 |

|                                 |             |
|---------------------------------|-------------|
| <b>INTEL MATH CO-PROCESSORS</b> |             |
| 80287/10MHz                     | 205         |
| 80387-SX16                      | 315         |
| 80387-20/25/33                  | 349/445/555 |
| 0287 10 MHz                     | 205         |

**SCHWAB COMPUTER**

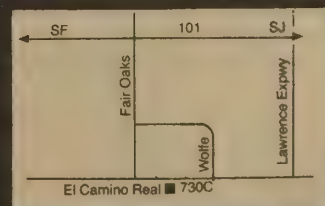
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# Desktop Publishing For The DOS Office:

## Software Choices

BY BIRRELL  
WALSH

In our previous discussion of the issues involved in setting up your DOS office for desktop publishing, we looked at the hardware choices. Briefly, these were our recommendations:

- Consider your people as more important than the hardware. What works for them will work for you in the long term. In practical terms, that means taking them with you when you shop.

- If you have a 286 computer, keep it for now. If you have an XT, it is time to trade it in for a 386 (not an SX). Applications are coming that require the large memory that only 286 and 386 machines support. You must have a hard disk for desktop publishing.

- We recommended the crisp Trinitron

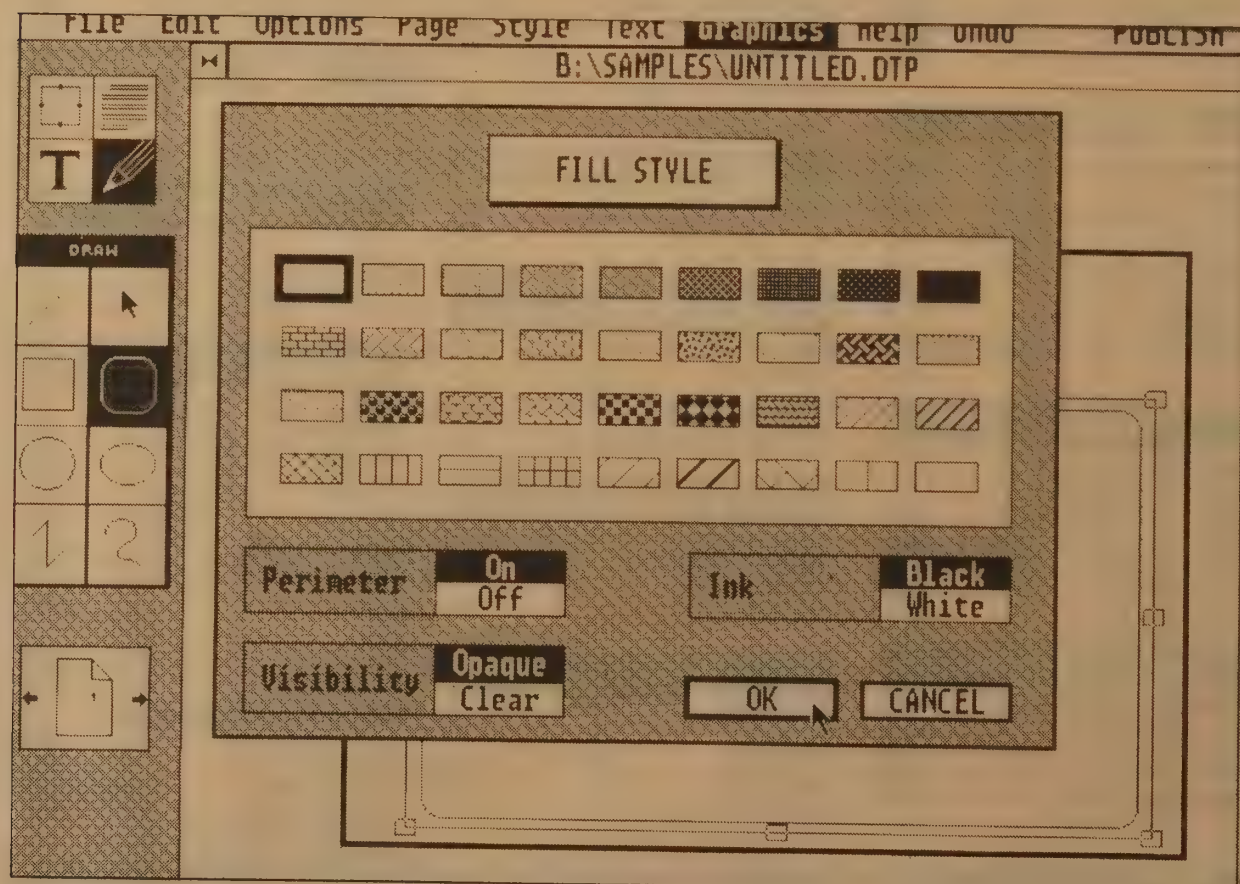
look of the high-resolution (1024 x 768) Sony 1304 monitor unless you also need to use the monitor for a CGA laptop's external display. In that case the Sony 1302 works well. If you do not want to upgrade to this level, keep your Hercules-compatible display. Don't bother with the intermediate resolutions (EGA, VGA).

- We recommended the reliable, fast, and skillfully supported ATI Wonderboard as the display card. It comes with a mouse. We also recommended the industry-standard Microsoft Mouse, and (for heavy graphic uses) the IMCSI Mouse-Pen.

- For a printer, we suggested that you get a printer compatible with the Hewlett-Packard LaserJet series—the standard in the DOS

laser printer business—and that you turn it into a PostScript printer with the very popular Pacific Page Cartridge from Pacific Data Products. Finally, we suggested that you get at least a hand-scanner, and recommended the Logitech ScanMan.

What do you get for your extra money if you spend it on high-end hardware? Programs that allow you to do finer and more professional work will demand a great deal of memory and speed. You can see more detail on the better monitors, and you can make layout decisions without having to print a proof at every step. Your work is faster, and your people are more productive. The hardware serves as a workbench on which your people and the software can produce elegant work.



Publish It! provides an unusually powerful entry-level package.

### ON TO SOFTWARE

You can try out the desktop publishing business with Timeworks' Publish It! Similar in many ways to Ventura Publisher, it is a usable package that may do everything you need.

The next step is to use Windows 3. With Microsoft's Graphical User Interface, you can install and use Corel DRAW! Then you can move on to the two Windows-based desktop publishing packages that dominate the market: Ventura Publisher itself and Aldus PageMaker.

### PUBLISH IT!

Timeworks has released the remarkably useful "introductory" package of Publish It! While it is customary to speak condescendingly of beginning desktop publishing packages, it would not be wise to do so with this one. This is a complete program, easy to use and powerful, and for many users it is all that they will need.

You can use the program to write the text. It includes a word processor with search and replace, and is reasonably fast on the screen. It also imports from all the standard DOS word processors, as well as accepting ASCII files.

Layout is quick and intuitive, using the now-universal metaphor of columns and graphic windows as containers to be shaped



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### MICRO-L 486-25 Cache Network Server

# \$2,795

- Intel 80486-25MHz CPU, Lndmk: 114.10 MHz
- CMOS Set-up, MIPS: 11.104
- CPU Built-in 1st level 8KB Cache memory with 2nd level 64k expands to 256K Cache memory
- Support external Weitek 4167
- 4MB RAM onboard with maximum 16MB
- Eight 16-bit slots
- AMI 486 BIOS w/Shadow RAM
- 1.2MB & 1.44MB FDs (TEAC)
- 2 serial, 1 parallel, 1 game ports
- 1:1 interleave ESDI controller with 32k Cache
- Keytronic 101 keyboard (USA)
- Tower case with 230W P/S

### MICRO-L 386-33/Cache Network Server

# \$1,645

- Genuine 32-bit Intel 386-33MHz CPU, Lndmk: 58.7MHz
- 33MHz Intel 82385 Cache Controller w/64k memory
- 4MB RAM on-board with maximum 16MB
- 80387 Weitek WTL 3167 co-processor socket
- True OS/2, XENIX, MS DOS, and Novell compatible
- 8 exp. slots (1-32, 6-16, 1-8 bit)
- 1:1 interleave controller or IDE
- Phoenix BIOS
- 1.2 MB & 1.44MB FDs (Teac)
- 2 serial, 1 parallel, 1 game port
- Keytronic 101 keyboard (USA)
- Tower case w/6 HHD and 230W Power Supply
- MS DOS 3.3 or 4.01 included

#### STANDARD SYSTEM W/MONITOR & VIDEO CARD

| Monitor & Video Card          | No Video & Monitor | 14" VGA 640 x 480 | 14" VGA Multiscan 800 x 600 | 15" Super Multiscan |
|-------------------------------|--------------------|-------------------|-----------------------------|---------------------|
| Basic System -                | 2,795              | 3,180             | 3,325                       | 3,565               |
| WITH HARD DRIVE               |                    |                   |                             |                     |
| 158MB, 14ms - ESDI            | 3,675              | 4,060             | 4,205                       | 4,445               |
| 338MB, 16ms - ESDI            | 4,160              | 4,545             | 4,690                       | 4,930               |
| 768MB, 16ms - ESDI            | 4,660              | 5,045             | 5,190                       | 5,430               |
| *Maxtor Drive *Relays Monitor |                    |                   |                             |                     |

#### STANDARD SYSTEM W/MONITOR & VIDEO CARD

| Monitor & Video Card          | No Video & Monitor | 14" VGA 640 x 480 | 14" Multiscan 800 x 600 | HiRes VGA 1024 x 768 Saito CM-1440 |
|-------------------------------|--------------------|-------------------|-------------------------|------------------------------------|
| Basic System -                | 1,645              | 2,030             | 2,175                   | 2,280                              |
| WITH HARD DRIVE               |                    |                   |                         |                                    |
| 80MB, 19ms - IDE              | 2,125              | 2,510             | 2,655                   | 2,760                              |
| 100MB, 25ms - IDE             | 2,185              | 2,570             | 2,715                   | 2,820                              |
| 158MB, 14ms - ESDI            | 2,595              | 2,980             | 3,125                   | 3,230                              |
| 338MB, 16ms - ESDI            | 3,085              | 3,470             | 3,615                   | 3,720                              |
| *Maxtor Drive *Relays Monitor |                    |                   |                         |                                    |

### MICRO-L 386-25 Business System

# \$1,150

- 80386-25MHz CPU, Lndmk: 28.0MHz
- True OS/2, XENIX, MS DOS, and Novell compatible
- 4MB RAM expandable to 8MB
- 80387 co-processor socket
- 1.2MB & 1.44MB FDs (Teac)
- HD/2FD IDE controller
- AMI BIOS, NEAT™ Chipset
- 8 expansion slots
- 2 serial, 1 parallel, 1 game port
- Keytronic 101 keyboard (USA)
- 6-drive Baby AT case w/sec. lock, LED indicators, 200W P/S
- Tower Case add \$85

#### STANDARD SYSTEM W/MONITOR & VIDEO CARD

| Monitor & Video Card          | No Video & Monitor | 14" VGA 640 x 480 | 14" Multiscan 800 x 600 | HiRes VGA 1024 x 768 Saito CM-1440 |
|-------------------------------|--------------------|-------------------|-------------------------|------------------------------------|
| Basic System -                | 1,150              | 1,535             | 1,680                   | 1,785                              |
| WITH HARD DRIVE               |                    |                   |                         |                                    |
| 40MB, 27ms - IDE              | 1,395              | 1,780             | 1,925                   | 2,030                              |
| 80MB, 19ms - IDE              | 1,645              | 2,030             | 2,175                   | 2,280                              |
| 100MB, 25ms - IDE             | 1,695              | 2,080             | 2,225                   | 2,330                              |
| *Maxtor Drive *Relays Monitor |                    |                   |                         |                                    |

### MICRO-L 386-SX Executive System

# \$665

- 80386/SX-16 CPU runs 16MHz
- 80387 co-processor socket
- 1MB RAM expandable to 8MB
- 1.2 MB floppy drive (Teac)
- True OS/2, XENIX, MS DOS, and Novell compatible
- AMI BIOS, NEAT™ Chipset
- HD/2FD IDE controller
- 8 expansion slots
- 2 serial, 1 parallel, 1 game port
- Keytronic 101 keybd (USA)
- Deluxe baby-AT case with 200W Power Supply

#### STANDARD SYSTEM W/MONITOR & VIDEO CARD

| Monitor & Video Card | No Video & Monitor | 12" Flat Mono 720 x 350 | 14" VGA 640 x 480 | 14" Multiscan 800 x 600 |
|----------------------|--------------------|-------------------------|-------------------|-------------------------|
| Basic System -       | 665                | 765                     | 1,050             | 1,195                   |
| WITH HARD DRIVE      |                    |                         |                   |                         |
| 40MB, 27ms - IDE     | 910                | 1,010                   | 1,295             | 1,440                   |
| 80MB, 19ms - IDE     | 1,145              | 1,245                   | 1,530             | 1,675                   |
| 100MB, 25ms - IDE    | 1,190              | 1,290                   | 1,575             | 1,720                   |

### MICRO-L 286-12 Desktop System

# \$415

- 80286-12.5MHz CPU
- 80287 co-processor socket
- 1MB RAM expandable to 4MB
- True OS/2, XENIX, MS DOS, and Novell compatible
- 1.2 MB floppy drive (Teac)
- AMI BIOS, VLSI
- HD/2FD IDE controller
- 8 expansion slots
- 2 serial, 1 parallel, 1 game port
- 101 Enhanced keyboard
- Deluxe baby-AT w/200W P/S
- 16MHz - Add \$99 20MHz - Add \$145

#### STANDARD SYSTEM W/MONITOR & VIDEO CARD

| Monitor & Video Card          | No Video & Monitor | 12" Flat Mono 720 x 350 | 14" VGA 640 x 480 | 14" VGA Multiscan Relays |
|-------------------------------|--------------------|-------------------------|-------------------|--------------------------|
| Basic System -                | 415                | 515                     | 800               | 945                      |
| WITH HARD DRIVE               |                    |                         |                   |                          |
| 40MB, 27ms - IDE              | 665                | 765                     | 1,050             | 1,195                    |
| *80MB, 19ms - IDE             | 895                | 995                     | 1,280             | 1,425                    |
| **100MB, 25ms - IDE           | 940                | 1,040                   | 1,325             | 1,470                    |
| *Quantum drive **Conner drive |                    |                         |                   |                          |

#### MOTHERBOARDS

|                                          |         |
|------------------------------------------|---------|
| 486-25 EISA up to 64MB                   | \$2,695 |
| 486-25 AT w/64K up to 16MB               | \$1,795 |
| 386-33 w/64K CACHE w/CPU                 | \$865   |
| 386-25 w/64K CACHE w/CPU                 | \$765   |
| 386-25 w/CPU - ECS                       | \$595   |
| 286-16 NEAT - ECS                        | \$205   |
| 286-12 VLSI - ECS                        | \$105   |
| XT 10MHz VIP                             | \$50    |
| XT - 10MHz Complete System* Call Contig. | \$275   |

#### PRINTERS

|                            |         |
|----------------------------|---------|
| PANASONIC KX-P1180 9-pin   | \$148   |
| PANASONIC KX-P1124 24-pin  | \$269   |
| PANASONIC KX-P1624 24-pin  | \$342   |
| PANASONIC KX-P1695 24-pin  | \$375   |
| PANASONIC KX-P44501 24-pin | \$1,275 |
| CITIZEN GSX-140 24-pin     | \$275   |

#### HP LASERJET MEM UPGRADES

|                               |               |
|-------------------------------|---------------|
| JetRam II, IID-1MB, 2MB, 4MB  | \$120/155/250 |
| JetRam IIP, IIP-1MB, 2MB, 4MB | \$125/160/255 |

#### HARD DRIVES

|                       |       |
|-----------------------|-------|
| MAXTOR XT-4170E 158MB | \$825 |
|-----------------------|-------|

|                              |         |
|------------------------------|---------|
| MAXTOR XT-4380E 338MB        | \$1,280 |
| MAXTOR XT-8760E 768MB        | \$1,750 |
| MAXTOR LXT-200MB IDE         | \$845   |
| CONNER CP-3044 40MB          | \$310   |
| CONNER CP-3184 80MB          | \$480   |
| CONNER CP-3104 100MB         | \$495   |
| CONNER CP-3204 200MB         | \$780   |
| QUANTUM 80MB IDE 19ms        | \$480   |
| WD IDE 40MB wh/duplex, cable | \$265   |

#### MONITORS

|                     |       |
|---------------------|-------|
| RELISYS VGA RE-8513 | \$310 |
|---------------------|-------|

|                                 |       |
|---------------------------------|-------|
| RELISYS Multiscan RE-5155       | \$400 |
| RELISYS Super Multiscan RE-1529 | \$580 |
| RELISYS VGA Gry-Sol RE-8503     | \$120 |
| SEIKO VGA 1024X768 CM-1440      | \$495 |
| SEIKO VGA 1024X768 CM-1450      | \$650 |
| GENOA VGACard 6300 (256K)       | \$125 |
| GENOA VGA Card 6400 (512K)      | \$145 |
| Video-7 VRAM, VGA(512)          | \$355 |
| ORCHID ProDesigner II 1MB       | \$295 |

#### MISCELLANEOUS

|                             |          |
|-----------------------------|----------|
| TEAC 1.2/1.44 MB FD - qty 5 | \$60/850 |
|-----------------------------|----------|

|                                           |                      |
|-------------------------------------------|----------------------|
| Pacioli 2000 Accounting Software - Qty 10 | \$22*                |
| Logitech C-9 Serial Mouse                 | \$62                 |
| Logitech Bus Mouse                        | \$72                 |
| Logitech Trackman™ Serial                 | \$75                 |
| FAX modem 2400 /Send                      | \$83                 |
| FAX modem 9600 /Send-Race & Software      | \$179                |
| COLORADO Jumbo Tape Back-up               | \$249                |
| MS DOS 3.3/4.01                           | \$80                 |
| KEYTRONICS 101 Keyboard                   | \$40                 |
| Lite-On Enhanced 101 Keyboard             | \$28                 |
| TOSHIBA Laptop                            | Call                 |
| Memory Chips                              | Call for Best Price! |

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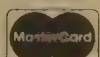
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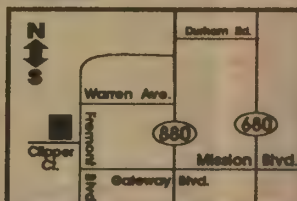
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The new Pivot display is the latest innovation from Radius and has proven to be one of their most versatile products. With the ability to switch from portrait to landscape mode through the use of sophisticated RadiusWare software, this monitor combines the best of a two page and full page display. The Pivot is the perfect complement to virtually any desktop publishing, accounting or word processing station. Come see the Pivot Display in our demo room TODAY!

**The Radius PIVOT Display**  
**\$1199**

The Radius Two Page Display converts any Macintosh from the SE family or II family into a professional publishing workstation. By displaying two letter size pages in high resolution monochrome graphics this monitor is perfect for spread sheets too. Radius designed the TPD with a paper-like image which maintains superior brightness, contrast and focus across the entire screen. The TPD also comes with powerful software features like tear off menus, and includes a one year manufacturer's warranty.



**The Radius Two Page Display**  
**\$1299**

**Other Radius Products...IN STOCK**

- 21" Monochrome Monitor for SE
- Two Page Color Display (24 bit)
- Two Page GrayScale (8-Bit)
- Radius TV
- Quick Color Graphics Accelerator
- 25 Mhz Accelerator for SE
- 16 Mhz Accelerator for Plus
- Radius Color Systems

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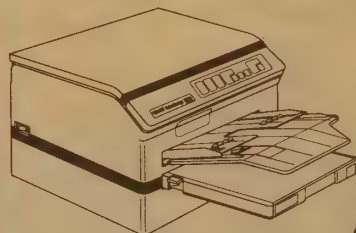
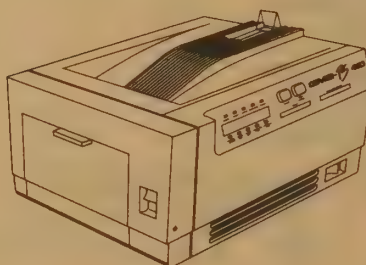
## QMS PS 410

68020 @ 16 MHz, 4ppm  
2 Mb RAM, 45 Fonts

*This product represents a true revolution in laser printers.*

*Compact, powerful and affordable.*

*Truly the best printer in its class!!*



## QMS ColorScript 100 Model 10

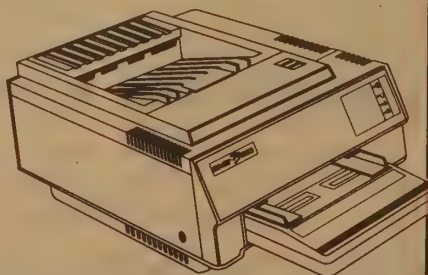
68020 @ 16 MHz  
4 Mb RAM, 35 Fonts

*The ColorScript 100 has the highest quality and is the most inexpensive Adobe postscript color printer available.*

## QMS PS 810

68000 @ 16 MHz  
8 ppm, 2 Mb RAM

*The 810 can be classified as one of the best overall printers. As a true Adobe postscript printer operating at 16 MHz in a Canon 8ppm engine the PS 810 out does most other printers.*



**All Printers Are In Stock And Available!**  
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**Propoint Trackball**  
**\$89**

## 300 GS Scanner

Abaton's 300 GS scanner is a high quality, effective and very useful gray scale scanner that is priced in most people's budgets.

With the quality of the more expensive units and a price that is impossible to beat, this scanner is definitely the one for you!

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## Interfax 24/96

This product represents one of the industry's most successful and useful peripherals. The Interfax modem is a 2400 baud modem and 9600 baud fax that has more features and capabilities than the most expensive fax machines. There is no way to lose on this award-winning product from Abaton.

**\$399**

# RasterOps

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(8-bit video card upgradable to 24-bit)

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## Colorboard 264

(24-bit color for 13" RGB Monitor)

**\$599**

## ClearVue System /SE

(72 Hz Refresh Rate, built-in 16 MHz Accelerator and 19" Monochrome Display)

**\$1299**

## ClearVue GS System (for SE/30 or Mac II)

(72 Hz Refresh Rate, 8-bit Gray Scale and 19" Display)

**\$1499**

## 24L Color System

(24-bit color and a 19" trinitron display)

**\$5595**

## 8L Color System

(8-bit color and a 19" trinitron display)

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9600M Plus (9600bps modem & Fax) **\$699**

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# CUTTING EDGE

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## TWO PAGE DISPLAY

70 Hz, 76 DPI 19" Monochrome monitor with tilt and swivel for Mac SE, II and SE/30.

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## FULL PAGE DISPLAY

70 Hz, 76 DPI 15" Monochrome monitor with tilt and swivel for Mac SE, II and SE/30.

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External 20 Mb HD **\$349**

External 32 Mb HD **\$449**

External 45 Mb HD **\$599**

**44Mb Removeable  
Hard Drive  
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|---------------------|--------|----------------------|--------|---------------------|--------|
| HP Deskwriter       | \$749  | 33 MHz Accelerator   | \$1599 | QMS PS 410          | \$2199 |
| ImageWriter II      | \$349  | 50 MHz Accelerator   | \$2949 | QMS PS JET PLUS     | \$2499 |
| Mac Plus            | \$599  | 800k External Floppy | \$99   | Macintosh SE/30     | \$3099 |
| Macintosh II (80/4) | \$3399 | Mac SE Dual Floppy   | \$1299 | QMS ColorScript 100 | \$7899 |

### Macintosh SE [20/1]

- 800k Floppy Drive.
- MC68000 Microprocessor.
- 8 MHz Clock Speed.
- 20 Mb Hard Drive
- 1 Mb of Ram.
- One SE expansion slots for accelerators or large monochrome monitors.



\$1399

### Macintosh II [80/4]

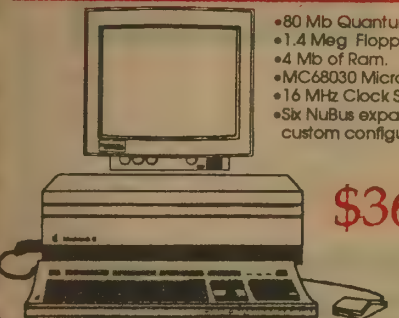
- 80 Mb Quantum Hard Drive
- 4 Mb of Ram.
- MC68020 Microprocessor.
- 16 MHz Clock Speed.
- Six NuBus expansion slots for custom configuration.



\$3399\*

### Macintosh II x [80/4]

- 80 Mb Quantum Hard Drive
- 1.4 Meg Floppy Drive.
- 4 Mb of Ram.
- MC68030 Microprocessor.
- 16 MHz Clock Speed.
- Six NuBus expansion slots for custom configuration.



\$3699\*

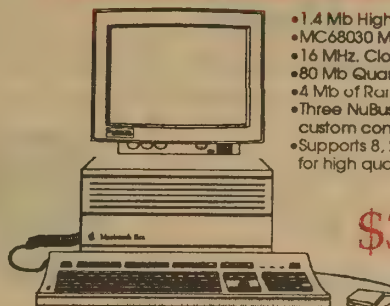
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Displays  
(With Mac II Interface)  
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### Macintosh IICx [80/4]

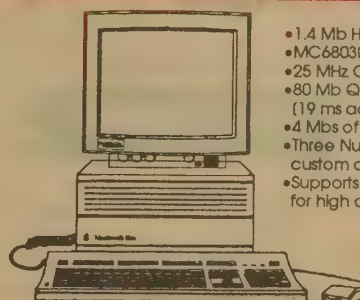
- 1.4 Mb High Density Floppy Drive.
- MC68030 Microprocessor.
- 16 MHz Clock Speed.
- 80 Mb Quantum Hard Drive
- 4 Mb of Ram.
- Three NuBus expansion slots for custom configuration.
- Supports 8, 24 and 32 bit Quick Draw for high quality graphics.



\$3399\*

### Macintosh IICI [80/4]

- 1.4 Mb High Density Floppy Drive.
- MC68030 Microprocessor.
- 25 MHz Clock Speed.
- 80 Mb Quantum Hard Drive (19 ms access time).
- 4 Mbs of Ram.
- Three NuBus expansion slots for custom configuration.
- Supports 8, 24 and 32 bit Quick Draw for high quality colors graphics.



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### Macintosh Portable [40/1]

- 1.4 Mb High Density Floppy Drive.
- MC68000 Microprocessor.
- 40 Mb Quantum Hard Drive
- 1 Mb of Ram.
- 6 to 12 hours on single battery charge.

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\*Price does not include keyboard, video board or monitor.



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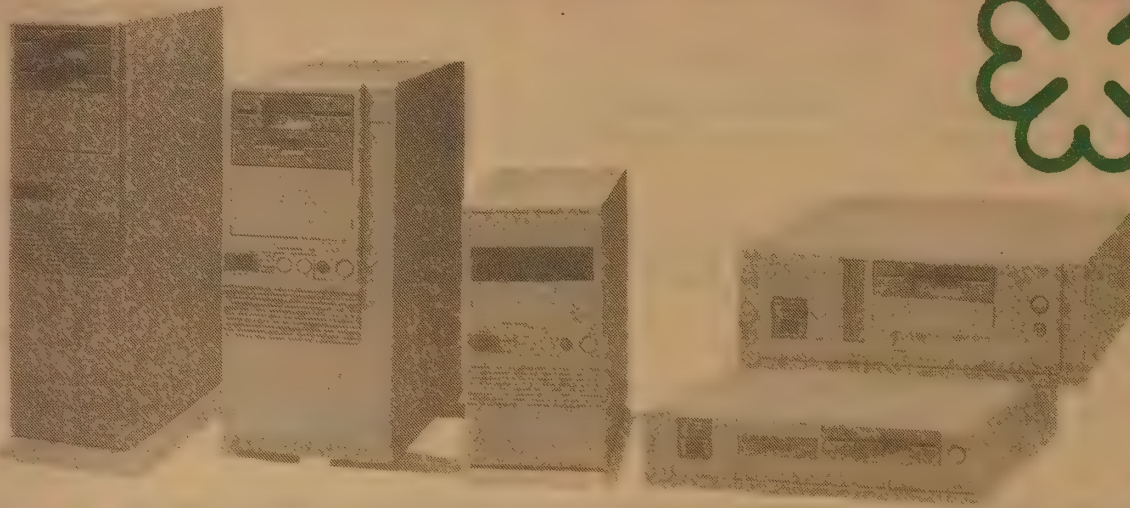
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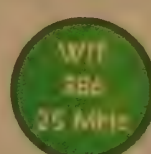
## COMPUTER SYSTEMS AND PERIPHERALS



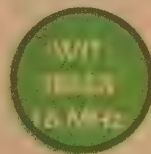
- 4 MB RAM w/128K Cache
  - 350 MB SCSI or ESDI HD
  - Vertical Case
  - 1.2 or 1.44 Floppy Drive
  - 1:1 Interleave FD/HD Controller
  - 2 Serial/1 Parallel/ 1 Game Port
  - Real Time Clock/CMOS Memory w/Battery Back-Up
  - 101 Keyboard
  - 230 W Power Supply
- \$4499**
- 4 MB RAM, 128K Cache, 350 MB HD



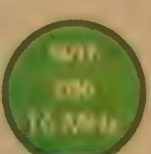
- 1 MB RAM
  - 1.2 or 1.44 Floppy Drive
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  - Real Time Clock/CMOS Memory w/Battery Back-Up
  - 101 Keyboard
  - 230 W Power Supply
  - Vertical Case
- \$1249**
- (w/64K Cache)



- 1 MB RAM
  - 1.2 or 1.44 Floppy Drive
  - 1:1 Interleave FD/HD Controller
  - 2 Serial/1 Parallel/ 1 Game Port
  - Real Time Clock/CMOS Memory w/Battery Back-Up
  - 101 Keyboard
  - 230 W Power Supply
  - AT Case
- \$849**
- Non-Cache
- \$949**
- w/64K Cache



- 1 MB RAM
  - 1.2 or 1.44 Floppy Drive
  - 1:1 Interleave FD/HD Controller
  - 2 Serial/1 Parallel/ 1 Game Port
  - Real Time Clock/CMOS Memory w/Battery Back-Up
  - 101 Keyboard
  - 230 W Power Supply
  - AT Case
- \$699**



- 1 MB RAM
  - 1.2 or 1.44 Floppy Drive
  - 1:1 Interleave FD/HD Controller
  - 2 Serial/1 Parallel/ 1 Game Port
  - Real Time Clock/CMOS Memory w/Battery Back-Up
  - 101 Keyboard
  - 230 W Power Supply
  - AT Case
- \$499**



- 1 MB RAM
  - 1.2 or 1.44 Floppy Drive
  - 1:1 Interleave FD/HD Controller
  - 2 Serial/1 Parallel/ 1 Game Port
  - Real Time Clock/CMOS Memory w/Battery Back-Up
  - 101 Keyboard
  - 230 W Power Supply
  - AT Case
- \$429**

### VIDEO CARDS

|               |    |
|---------------|----|
| MGP           | 14 |
| MGP/CGP       | 39 |
| EGA 640 x 480 | 79 |
| VGA Trident   | 89 |
| Paradise      | 95 |
| Oak           | 75 |

### MISC.

Call for other items  
not listed

### MONITORS

|                    |      |
|--------------------|------|
| Relisys            |      |
| 5154 (EGA)         | 329  |
| 5155 (Multisync)   | 419  |
| 9513 (VGA)         | 319  |
| NEC                |      |
| 5 D                | 2255 |
| 3 D                | 620  |
| 2 A                | 459  |
| Hyundai Amber Mono | 70   |
| Samsung Color      | 275  |

### DISK DRIVES

|                       |      |
|-----------------------|------|
| Conner                |      |
| 80 MB 25 ms           | 509  |
| 100 MB 25 ms          | 519  |
| 200 MB 25 ms          | 899  |
| W.D. 40 MB 28 ms      | 259  |
| Toshiba 3.5" 44/66 MB |      |
| (23 ms)               | 339  |
| Maxtor                |      |
| 4170-E 158 MB         | 929  |
| ESDI 4380-E 338 MB    | 1319 |
| ESDI 8760-E 679 MB    | 2099 |
| Seagate               |      |
| ST-225 20 MB          | 189  |
| ST-251-1 40 MB        | 259  |

### ADD ON CARDS

|                         |     |                |     |
|-------------------------|-----|----------------|-----|
| AT I/O Plus IDE & FDC   | 40  | (w/S. Ware)    | 95  |
| IDE & FDC Card          | 25  | 9600 Fax Modem |     |
| XT Multi I/O (360K)     | 30  | (w/S. Ware)    | 235 |
| AT Multi I/O (2S/1P/1G) | 18  |                |     |
| Serial Card (4 Port)    | 65  |                |     |
| Serial Card (8 Port)    | 175 |                |     |
| RS-232 Serial Card      | 14  |                |     |
| Multi FDC               |     |                |     |
| (360K-1.44 MB) 4FD      | 29  |                |     |
| Game Card               | 12  |                |     |
| Real Time Clock Card    | 14  |                |     |
| 2400 Modem (w/S. Ware)  | 75  |                |     |
| 4800 Fax Modem          |     |                |     |

### DOS & MOUSE

|                       |     |
|-----------------------|-----|
| DOS 3.3               | 69  |
| DOS 4.01              | 71  |
| Logitech Serial Mouse | 77  |
| Logitech AT Bus Mouse | 85  |
| Scanman Plus          | 180 |



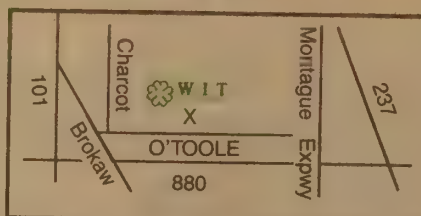
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Publish It! is not a huge investment (the

has been developed for Windows: Corel Draw! is an example. These three streams have come together to make Windows 3 a very successful environment, with many supporting software makers.

We mentioned earlier that some programs need more memory than you can get on an XT, and here they are—both PageMaker and Ventura Publisher want more than a megabyte of RAM. Ventura currently wants 2Mb and a 386; and PageMaker 4 is expected to request 2Mb (though it might settle for 1Mb and a 286). If you wish to use an IBM-compatible for high-end desktop publishing, you will need Windows 3 and a big machine.

Corel Draw!'s street price is \$330 to \$390.

## ALDUS PAGEMAKER AND XEROX VENTURA PUBLISHER

Up till now Aldus PageMaker has been the choice for magazines or graphically complex pages. Xerox's Ventura Publisher has been the choice for multichapter books and for the handling of tables. But Aldus's PageMaker 4 for the PC is worth waiting for, whether you publish books or magazines.

For some time the battle between PageMaker and Ventura Publisher has been a case of convergent evolution. A feature would appear in one, and the next revision of its rival

## COREL DRAW!

If your publication is heavily graphic, get Corel Draw!

If you have never used a draw package, the difference between draw and paint programs can be intimidating. Paint programs are fairly obvious: the cursor functions like a pen or brush, and your skill with a pencil quickly transfers to the screen.

A draw (or "vector graphics") program treats graphic elements as elastic and mobile objects. You create them by defining end- and mid-points of perimeters, and the program creates, fills, and manages the objects for you. One common use is to build a complex headline that mixes fonts and other images.

Managing the object is the specialty of draw programs. The headline (or other graphic) you have created can be rotated or made snakelike, shaded and semi-transparent. Fills of color or patterns can be richly complex. The handles on graphic objects can each be moved, and each move reshapes the object.

The image is stored not as a bitmap, but as a series of formulae for calculating the position and appearance of the graphic object. The draw program will render images in the best resolution available in each medium, whether the screen or your printer. Corel Draw! will also generate color separations.

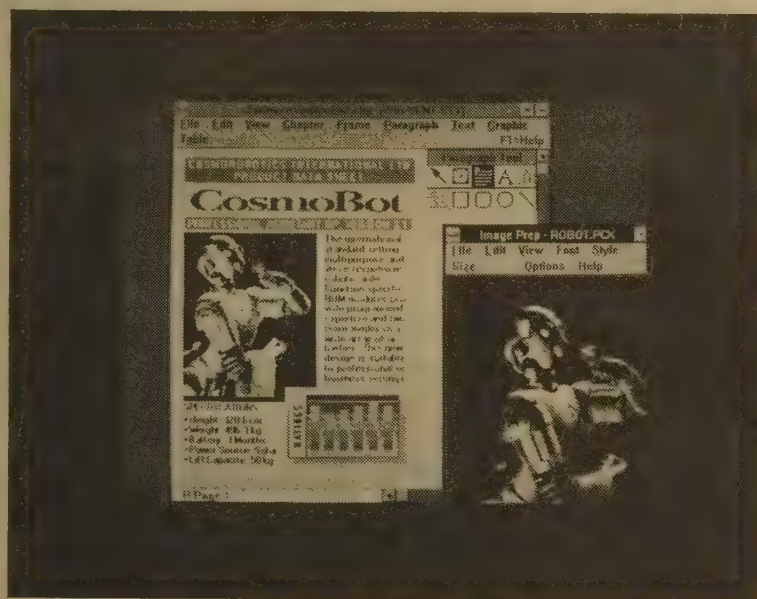
Corel Draw! shares the Windows environment with PageMaker and Ventura. You can build an image in Draw!, move it to the publishing package, and then return to Draw! to reshape it if need be. You may find, though, that Corel's package *becomes* your major publisher itself. If you publish mostly single sheets with many graphics, or if you design master images to be transferred to other media (such as T-shirts, key-chains, or letter-head), Corel Draw! is more efficient than any text-oriented publisher.

**We mentioned earlier that some programs need more memory than you can get on an XT, and here they are—both PageMaker and Ventura Publisher want more than a megabyte of RAM. If you wish to use an IBM-compatible for high-end desktop publishing, you will need Windows 3 and a big machine.**

would have that feature as well.

Both programs have the same metaphor as Publish It! Text and graphics are placed into containers which are positioned on the page by the designer. Both allow the user to develop formatting definitions (such as "Subheadline = Times Roman font, 16 point size, centered") and to store the definitions in style sheets. Both let you format paragraphs by selecting them and then clicking on a style-sheet definition. They accept graphics in similar formats. Both will print on PostScript printers and on the DOS-standard Hewlett-Packard LaserJets. Street prices for each are in the \$500 to \$590 range.

There are differences in the current versions. At this time Ventura has book-publication amenities that PageMaker lacks. It can generate tables of contents and indexes.



**Xerox Ventura Publisher is now available in a Windows version.**

street price is \$140-\$180), so it's the package to get if you want to try out desktop publishing without mortgaging the house. Publish It! is remarkable for the collection of templates, fonts, and clip art it includes. When you begin work with the program, you already have an excellent collection of layout templates which can serve as a beginner's model. If you want to publish a newsletter, Publish It! is more than adequate.

## BIGGER AND BETTER: THE WORLD OF WINDOWS

With Windows 3, we can use the desktop publishing package in a common environment with word processors and spreadsheets. You can use the built-in paint and text program to build the images and copy, should you wish. Windows 3 is like an inelegant Macintosh.

Because of the similarity, a number of programs have been imported from the Macintosh to the Windows environment. One of them is PageMaker, from Aldus. Ventura Publisher has been imported from the competing GEM environment. A third group



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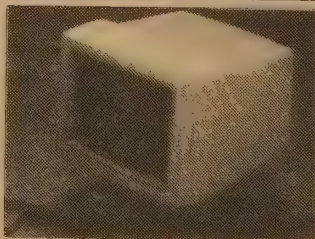
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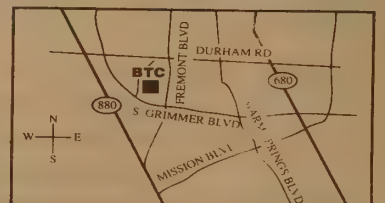
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It has a publication manager to keep track of the chapters in a book.

PageMaker comes from the Macintosh environment. Like most programs of that heritage, it is gracefully graphic. You set tabs in PageMaker by clicking on a ruler. PageMaker is also more flexible in defining the shapes of included graphic objects, allowing you to flow text around the exact shape of an illustration rather than around a rectangle. Magazines demand this kind of graphic flexibility, so PageMaker has been the purchase of choice for magazine publication, and Ventura for book publication.

However, PageMaker 4 for the PC is coming.

It already exists for the Macintosh, so it is more than vaporware. If the features of the Mac version are implemented on the PC, we will see all the book management features of Ventura in PageMaker 4. The combination of PageMaker graphic facilities with book management features, like multi-chapter indexing and table-of-contents generation, will give PageMaker 4 the best of both worlds.

PageMaker 4 also has a text processor, the Story Editor, which will let you write or revise text without waiting for an entire document to reformat after each one-character revision. Also, PageMaker documents can be exchanged between the Mac and the PC, although you must have the same fonts installed on each machine to get complete compatibility.

The choice thus tilts to PageMaker. The question that remains is whether to buy version 3.x now or to wait for version 4's rumored New Year release date. That release date has been backing away, so it might do so again and leave you with no product if you wait. But

Aldus has had stiff upgrade prices—those who bought the Mac version 3 in the three months prior to the release of Mac version 4 had to pay \$75 for the upgrade. Here we all must guess, since Aldus is declining comment on upgrade pricing.

## CONCLUSIONS

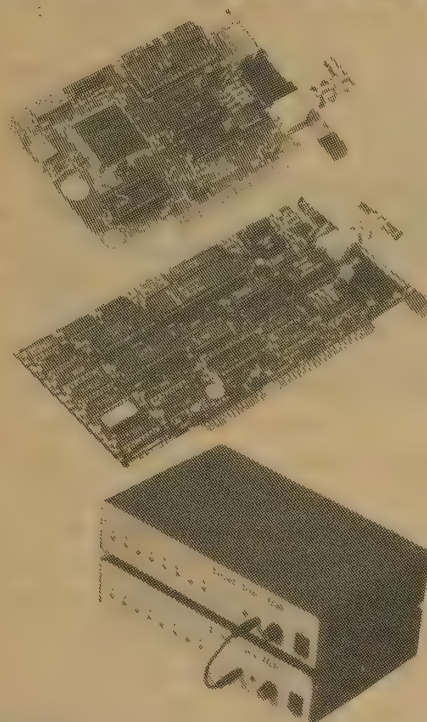
The software products you choose, like the hardware, should be those that work for the actual user. If you are not that user, please take the person who is with you when you

shop. Users are the ones who will make it work for you, and their enthusiastic collaboration later is worth every inconvenience now.

If you have a chance to take a course in desktop publishing on the PC, do it. What you learn will assist you in making your software choices. It will certainly help you create presentable publications. Do some comparison shopping, though; some prices in the training field are outrageous, and there's a lot of variance on what you get for your money. ■

**With Windows 3, we can use the desktop publishing package in a common environment with word processors and spreadsheets. You can use the built-in paint and text program to build the images and copy, should you wish.**

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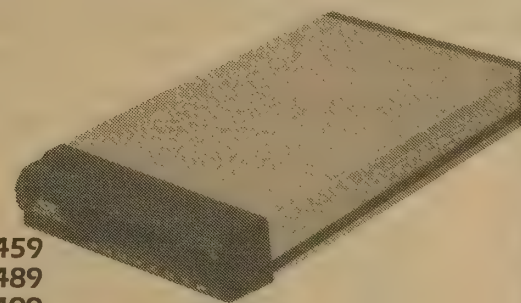
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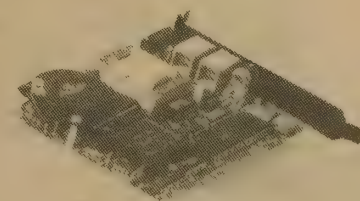
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# NeXT And Network-Based Publishing

*Plus: BOOTCON*

**BY WAYNE  
A. YACCO**

**O**ne of the more interesting demonstrations I've seen recently was at the Seybold Electronic Publishing Conference in San Jose.

Steve Jobs showed the new NeXTdimension color stations with 32-bit color, including eight levels of transparency. His demonstration featured an opaque object (Donald Duck) which remained visible as it moved behind the windows of a sports car. NeXT

publishing is that the industry is struggling to reinvent what they had with proprietary systems. Single-user desktop publishing is sort of an aberration, because it's not really the way most people work."

What's missing most is work-flow management and production tracking, although there are a couple of work-flow applications—from Boss Logic for NeXT, Odesta for Mac. Next month I'll discuss Office Solu-

information all to himself and his flock...

BOOTCON presents a menu at boot time that lets you configure your system on the fly. Instead of having a different version of config.sys for each network to which you want to connect, you simply include all of the variations in a single file. No more renaming files or maintaining special directories.

Some special remarks must be added to the configuration file to help BOOTCON create its menu and select the right set of statements. You can have up to twenty-six different configurations in a single config.sys, which gives you plenty of alternatives for loading different sets of drivers on each network. You can satisfy any combination of application requirements.

Here's a simple example of a BOOTCON file:

```
BUFFERS=30
FILES=20
DEVICE=C:\DOS\NECEMM.SYS
```

## LOCAL AREA NETWORKS

systems include JPEG, display-PostScript, and PostScript-output support that allows images like this to move among applications with the greatest of ease.

However, some of the system's slightly less spectacular features were equally interesting. The NeXTstep operating system can output PostScript files directly to a fax server. These documents are created from outlines at the same resolution as the fax standard (approximately two hundred lines), so they don't suffer from the distortions that images created at three hundred dots per inch undergo when bitmaps are scanned or translated.

Along with Apple, DEC, and Sun, NeXT is poised to offer LAN solutions to the printing industry. Note that all of these companies have more than a passing interest in networking. NeXT builds Ethernet, network support, and electronic mail into all of its machines. Yet, the best estimate of when publishing's transition to LANs will happen is sometime within the next ten years.

Ten years? Yes. Although microcomputers provide a rich platform for desktop publishing—off-the-shelf software, bitmapped displays, easy interfaces, standard architectures—the desktop publishing phenomenon itself is an anomaly in the publishing world. That's because it is largely an individual activity. Traditional turnkey publishing systems are networked, and they integrally support cooperative processing.

Support for cooperative processing is what the micro-based LAN solutions still lack; according to Craig Cline, associate editor for Seybold Publications: "What's happening in

large law offices, that unites a number of applications including the Mezzanine network file-management system, in the MS Windows environment. It could foreshadow a similar publishing solution for the PC.

Incidentally, while the NeXT computer's fax solution isn't available for the PC, something very like it will be soon. Delrina is preparing to ship two similar software solutions. One will work with fax boards supporting Intel's CAS and the other those using Sierra Semiconductor's SendFax chip set. And guess what? It's a Windows 3.0 application that works just like any other print driver.

### BOOTCON

A few weeks back I attended a user group meeting out in Pasadena and saw someone from Modular Systems demonstrate the BOOTCON utility. Since it's very applicable to networking, I'm going to tell you about it even though the guy who runs the group out there wants to keep this

**BOOTCON presents a menu at boot time that lets you configure your system on the fly. Instead of having a different version of config.sys for each network to which you want to connect, you simply include all of the variations in a single file. No more renaming files or maintaining special directories.**

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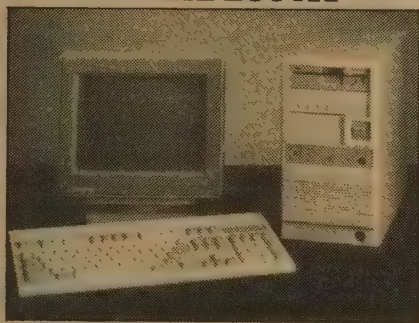
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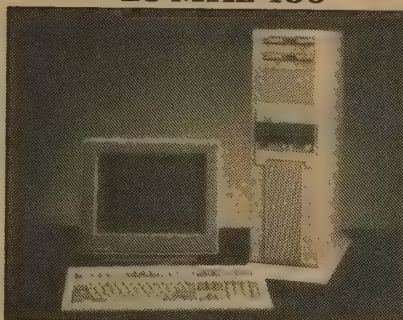


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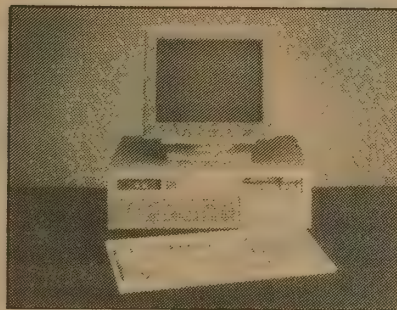


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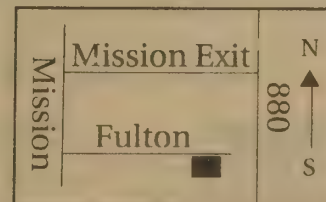
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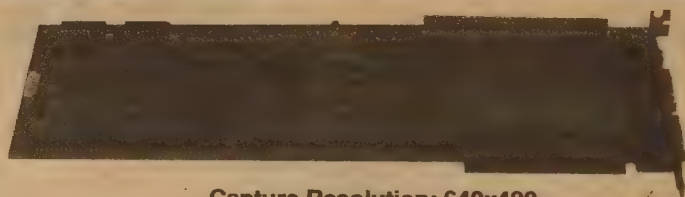




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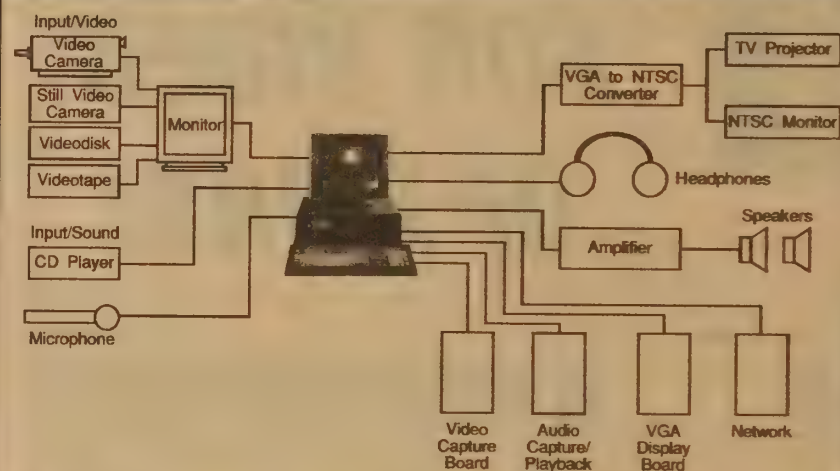
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# BUSINESS SOLUTIONS

DEVICE = C:\BOOTCON\BOOTCON.SYS

```
REM BC = [LOAD DOS SHELL
DEVICE=C:\DOS\ANSI.SYS
INSTALL=C:\DOS\SHARE.EXE
REM BC = ]
```

```
REM BC = [NORMAL SETUP
DEVICE=C:\DOS\ANSI.SYS
REM BC = ]
```

```
REM BC = [CLEAN SETUP
REM BC = ]
```

```
REM BC = [END]
```

Notice that common statements precede the BOOTCON driver. Once BOOTCON is loaded, it takes over and loads remaining statements selectively.

Although BOOTCON has no direct control over autoexec.bat, it does have a convention which can be used to control it. Statements are listed in the BOOTCON menu in the same order they appear in the config.sys file. In the menu, they are sequentially assigned a letter of the alphabet. When you select from the menu, a corresponding variable is set in the environment. That is, it is set to the same letter, A through Z, that appears next to the menu selection. For the above sample file, selecting the menu entry labeled "Normal Setup" would set this variable to "B."

Here's a sample autoexec.bat file:

```
@ECHO OFF
VERIFY ON
BREAK ON
PATH C:\C:\DOS;C:\UTIL;C:\BAT
PROMPT $P$G
IF NOT "%BOOTCON%" = "A" GOTO NOT_A
APPEND C:\DOS\MANUAL
C:\DOS\DOSSHELL
:NOT_A

IF NOT "%BOOTCON%" = "B" GOTO NOT_B
CD C:\W5
WORD/L
:NOT_B

IF NOT "%BOOTCON%" = "C" GOTO NOT_C
REM PLACE OPTION C CODE HERE
:NOT_C
```

Continuing with the foregoing assumptions, this job would change the current directory to \W5 and start MS Word. Notice that the last entry, "C," executes no additional commands and could be simply omitted.

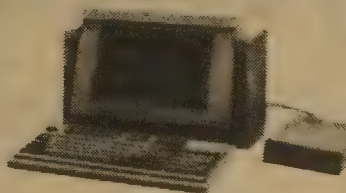
BOOTCON has some additional features. Password protection can be implemented to prevent users from booting from the hard disk without the proper shibboleth. If you

don't choose from BOOTCON's menu, the boot defaults to the first choice automatically, so a system can still start unattended. Program code occupies just 350 bytes of memory. It's well documented, even explaining the environment in detail.

Several functions are even provided from the menu to help you make selections: online help, file viewing (for autoexec.bat and config.sys), and online configuration

changes (including password) for the program itself. It's simple, low-cost, and useful. Not bad for a first effort.

LAN administrators, support departments, and others who interface with multiple protocols on a single physical network will definitely find BOOTCON useful. It's just a simple idea, but I'll bet there are even some installations where it could eliminate an extra machine or two. ■

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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# On Beyond Cat

## *The Finer Points of Input and Output*

**BY BENNETT  
FALK**

**J**ust about every operating system has a command that displays the contents of a file. In some operating systems (DOS, for example), the command is built into the operating system itself. In other systems (DEC's VMS, for example), the command to display a file invokes a standalone program.

Whether the program is built-in or standalone, all sorts of qualifications can be applied to the act of displaying a file. Some operating systems bias the command toward files with "displayable" contents; others bias the command to characteristics of the terminal on which a file is to be displayed.

On UNIX systems, the command that displays files is named "cat," short for "concatenate." To users of DOS, CP/M, or VMS, the name "cat" seems pointlessly esoteric and not nearly so intuitively satisfying as the command "type," which all those operating systems use to display a file.

### **CAT AND ITS USES**

The difference between "cat" and "type" is significant. Even though cat is most often used to display files on a user's terminal, it was written with a more general purpose in mind: to copy its input to its output.

Cat is not very selective in fulfilling this purpose: it doesn't care what sort of stuff shows up as input, and it has no knowledge of the kind of device attached to its output. It simply copies one to the other. If the input happens to be a text file and output happens to be the user's terminal, the file gets displayed on the screen. If the input happens to be several files, they will be concatenated on the output.

Because output can be redirected, the cat command is much more than a tool to display the contents of files. Cat can also be used to create new files, to make copies of existing files, to combine several files into one, and to send things to a printer.

Of course, it is possible to abuse this versatility. It is almost never sensible, for example, to cat a binary file (a file containing non-ASCII characters) to a terminal or printer—gibberish will be displayed, and the printer or terminal may be reset to some weird mode.

Cat would be a lot less interesting if it were not the prototype for a whole family of programs whose basic purpose is to copy input to output, giving the user an opportunity to affect how the copy is done. In one way or another, awk, cpp, fold, grep, more, nl, nroff, pg, pr, rev,

sed, tr, and troff all copy input to output, giving the user various opportunities to affect what gets copied and how the output is formatted.

### **M4—THE CADILLAC OF CAT**

The most obscure member of the cat family is "m4", described in the UNIX manuals as a "macro processor." In language about UNIX, it is usually assumed that anything with a two-letter name beginning with

**M4 can be run interactively, reading and copying its input one line at a time instead of waiting for an end-of-file signal. This makes it particularly useful as a front end for other programs. Database users, for example, can use m4 as an intelligent filter for combining ad hoc and canned queries. System administrators can use m4 to simplify things like network administration.**

**UNIX**

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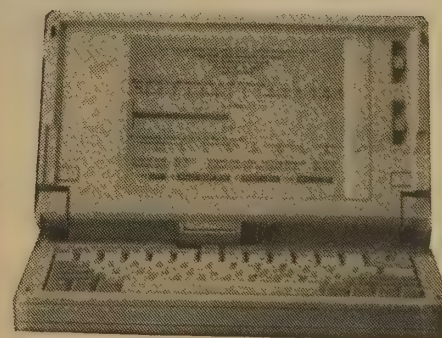
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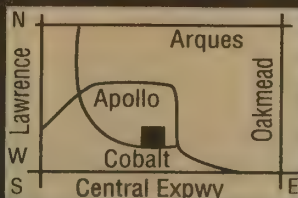
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"m" and having to do with macros must be a part of nroff, the UNIX document formatter.

**Cat would be a lot less interesting if it were not the prototype for a whole family of programs whose basic purpose is to copy input to output, giving the user an opportunity to affect how the copy is done.**

In fact, M4 has nothing to do with nroff and its packages of formatting macros; it is, rather, a programmable version of cat.

In the cat tradition, m4 copies its input to its output. In performing this operation, however, m4 has facilities to do lots of different things: perform integer arithmetic, run operating system commands, merge operating system files, substitute expanded definitions

for the names of any macros it encounters, and, finally, create and maintain macros and their definitions. M4 has a command set of

twenty-one built-in macros that allow the user to define macros, manage these definitions, control input from multiple files and the sequence of output. For all its obscurity, it is the Cadillac of cat programs.

## MACROS IN M4

Macros in m4 are similar in some respects to both regular expressions (used in awk, grep and sed) and variables. However, the relationship between macros and their definitions is potentially more complex than global substitution of one expression for another.

The simplest macros are just names that stand for constants. For example, the statement

```
define(TRUE, 1)
```

defines a macro named "TRUE" to have the value 1. Once defined, this macro would cause m4 to substitute 1 for every unquoted occurrence of the word TRUE in its input. M4 knows the difference between "TRUE" and

TRUE, and would simply pass the former directly through as output while substituting 1 for the latter. For a pattern to be recognizable as a macro name by m4, it must be surrounded by non-alphanumeric characters. (M4 would make no substitutions for TRUE in the string TRUEHEARTED.) Implementing these distinctions in UNIX regular expression syntax would be a punctuation nightmare.

It is important to know that m4 makes its substitutions as early as possible in the process of parsing its input, so the statements

```
define(a, 1)
define(b, a)
```

leave b with the value 1 because the "a" that occurs in the definition of "b" has already been replaced by 1. Subsequent changes to the value of "a" will have no effect on the value of "b".

The expansion of m4 macro names can be inhibited by enclosing the name in quotation marks. M4, whenever it evaluates something, strips off one layer of quotation

*continued on page 254*

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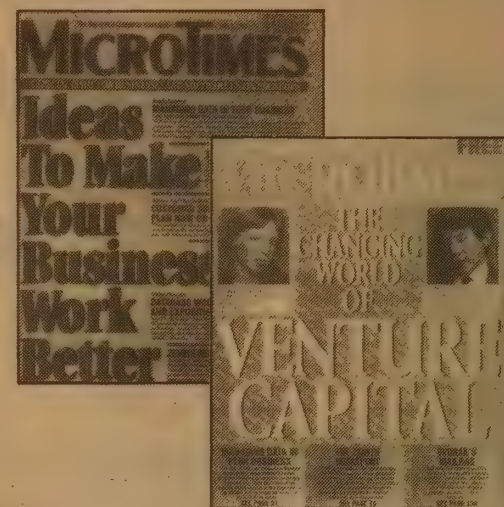
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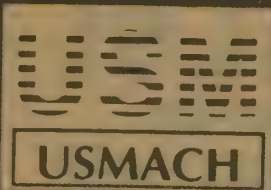


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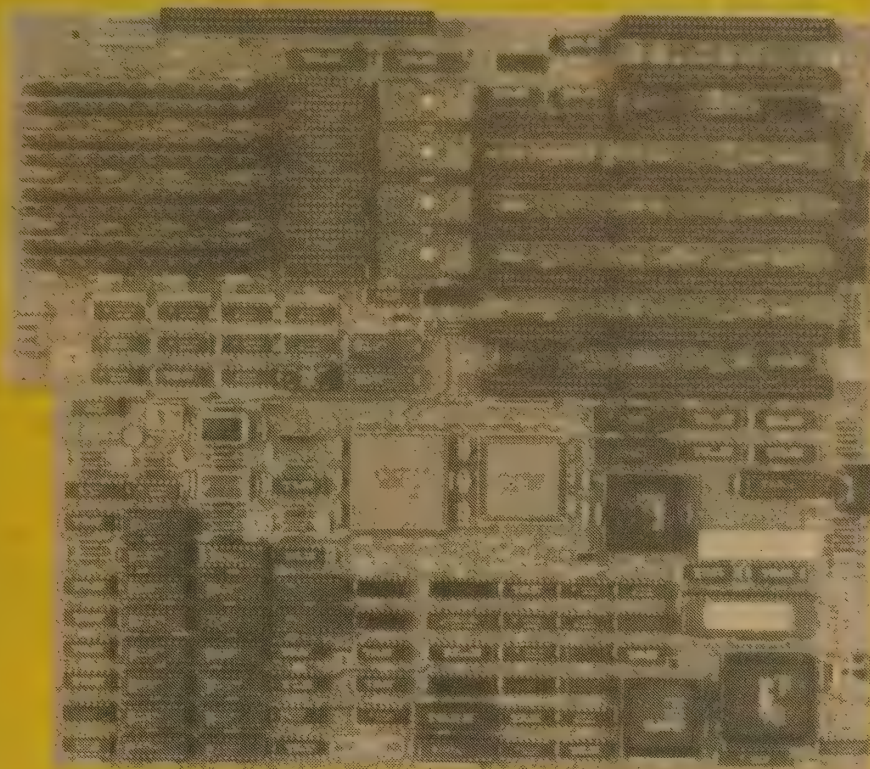
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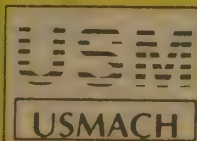
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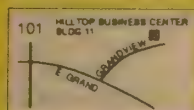
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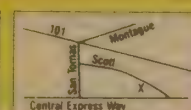
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- 42 MB Western Digital Hard Disk, 28ms
- VGA Color Monitor 640 x 480
- 16 bit VGA Card
- Minitower case w/200W
- 1.2 or 1.44 Floppy
- 2 Serial, 1 parallel, 1 game
- 101 Enhanced Keyboard

**\$995**

### 286-16 42 MB Hard Drive Color VGA System

- 1 MB RAM with EMS
- 42 MB Western Digital Hard Disk, 28ms
- VGA Color Monitor 640x480
- 16 bit VGA Card
- Minitower case w/200W
- 1.2 or 1.44 Floppy
- 2 Serial, 1 parallel, 1 game
- 101 Enhanced Keyboard

**\$1025**

### 286-20 42 MB Hard Drive Color VGA System

- 1 MB RAM with EMS
- 42 MB Western Digital Hard Disk, 28ms
- VGA Color Monitor 640x480
- 16 bit VGA Card
- Minitower case w/200W
- 1.2 or 1.44 Floppy
- 2 Serial, 1 parallel, 1 game
- 101 Enhanced Keyboard

**\$1095**

### 286-25 42 MB Hard Drive Color VGA System

- 1 MB RAM with EMS
- 42 MB Western Digital Hard Disk, 28ms
- VGA Color Monitor 640x480
- 16 bit VGA Card
- Minitower case w/200W
- 1.2 or 1.44 Floppy
- 2 Serial, 1 parallel, 1 game
- 101 Enhanced Keyboard

**\$1175**

### 386SX-16 42 MB Hard Drive Color VGA System

- 1 MB RAM with EMS
- 42 MB Western Digital Hard Disk, 28ms
- VGA Color Monitor 640x480
- 16 bit VGA Card
- Desktop case w/200W
- 1.2 or 1.44 Floppy
- 2 Serial, 1 parallel, 1 game
- 101 Enhanced Keyboard

**\$1195**

### 386-25 42 MB Hard Drive Color VGA System

- 1 MB RAM with EMS
- 42 MB Western Digital Hard Disk, 28ms
- VGA Color Monitor 640x480
- 16 bit VGA Card
- Desktop case w/200W
- 1.2 or 1.44 Floppy
- 2 Serial, 1 parallel, 1 game
- 101 Enhanced Keyboard

**\$1595**

### 386-25/64K Cache 42 MB Hard Drive Color VGA System

- 1 MB RAM with EMS
- 42 MB Western Digital Hard Disk, 28ms
- VGA Color Monitor 640x480
- 16 bit VGA Card
- Desktop case w/200W
- 1.2 or 1.44 Floppy
- 2 Serial, 1 parallel, 1 game
- 101 Enhanced Keyboard

**\$1695**

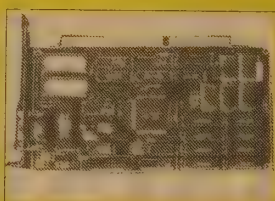
### 386-33/64K Cache 42 MB Hard Drive Color VGA System

- 1 MB RAM with EMS
- 42 MB Western Digital Hard Disk, 28ms
- VGA Color Monitor 640x480
- 16 bit VGA Card
- Desktop case w/200W
- 1.2 or 1.44 Floppy
- 2 Serial, 1 parallel, 1 game
- 101 Enhanced Keyboard

**\$1795**

### USM Pixel Ultimate VGA - 1MB Video Ram 1024 x 768 - 256 Colors

This card supports resolutions up to 1024 x 768 with 256 color and is compatible with all systems from XT's to 486-based machines. USM includes software drivers for AutoCAD, Windows 3.0, Word Perfect 5.1, Lotus 1-2-3, and many others. Other features are 132-column text modes, mixed graphics and text windows, split-screen features, and FASTBIOS.

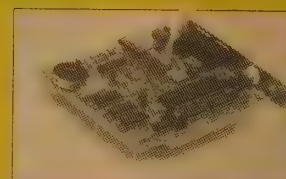


Made in USA

**\$185**

### USM PerfectFax 96i

Using advanced CMOS process that includes analog, digital signal processing and switched capacitor filter techniques, the PerfectFax transfers data twice as fast as other faxes and insures accuracy and reliability.



**\$135**

PerfectFax with 2400i modem MNP5 ..... **\$195**

## 486-25

- Vantage motherboard, made in USA
- 4MB RAM
- 1.2 MB or 1.44 MB Floppy Drive
- 101 Enhanced Keyboard
- 2 serial, 1 parallel, 1 game
- Desktop Case/Power Supply



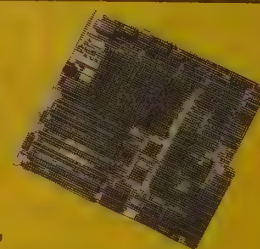
**\$2495**

MICRONICS AND AMI 486 PLEASE CALL

## MICRONICS

### BASE SYSTEMS:

1 MB RAM, 1.2 OR 1.44 FLOPPY, 101 KEYBOARD, IDE CONTROLLER, 2 SERIAL, 1 PARALLEL, 1 GAME



|                      |                |
|----------------------|----------------|
| 386-25 BMP .....     | <b>\$1195</b>  |
| 386-25 BCPASIC ..... | <b>1495</b>    |
| 386-33 BCPASIC ..... | <b>1595</b>    |
| 386-33 AT-ASIC ..... | <b>1695</b>    |
| 486-25 ISA .....     | <b>SPECIAL</b> |
| 486-25 EISA .....    | <b>CALL</b>    |
| 486-33 EISA .....    | <b>CALL</b>    |



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1101 Grandview Drive  
So. San Francisco, CA 94080  
415-952-5885  
FAX: 415-266-9143

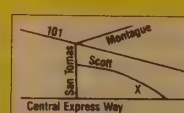
**USM SANTA CLARA**  
3070 Scott Blvd.  
Santa Clara, CA 95054  
408-980-0602  
FAX: 408-980-0604



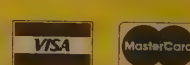
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Santa Clara

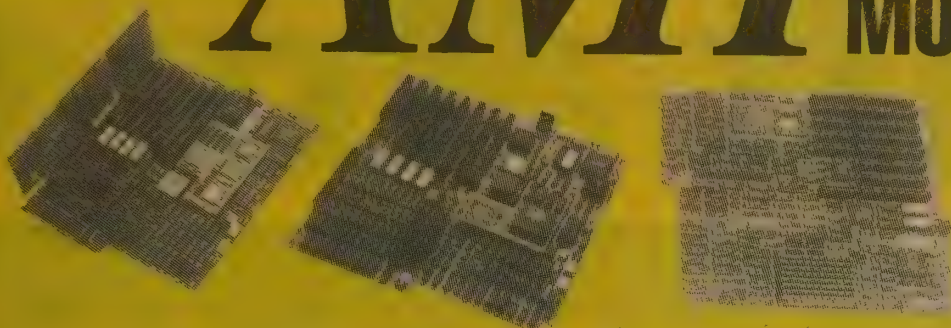


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Restocking charge 15%.



**USM**  
US MACH

# AMI THE LEADER IN HIGH PERFORMANCE MOTHERBOARDS



## 386SX-16

AMI motherboards are extremely reliable and are designed to perform in any conditions. They are tested at 130° F and feature a one year limited warranty.

## 386SX-20 Cache

To improve reliability and minimize noise we use 8 layer PC board construction. Not the common 4 or 6 layer you see elsewhere. One look shows.

## MK II 386-20

The 386 AT board from AMI received top ratings from the critics! *Infoworld*, *PC Magazine*, *BYTE* have all recently sung the praises of AMI. You owe it to yourself to buy from the best.

## MK III 386-25

This board is convertible to a Mark II 486 by simply plugging in a 486 Mark III Adapter into the CPU slot! You can increase performance when your needs increase.

## MK II/F4 386-33

With world-famous AMI 386 BIOS (with built-in set-up diagnostics) as well as a unique cache design. The AMI 386 AT motherboards are well suited for CAD/CAM, networking, multiuser and multitasking applications.

## MK IV 386-33

The Screamer 64/256K Writeback Cache  
The Fastest 386-33 in the World  
At AMI quality is a passion. All products go through extensive burn-in and other tests to meet the highest quality standards.

## Voyager 486-25/33 MHz

The Voyager features the latest in state of the art 486 technology, at a price that offers the biggest bang for your buck.

## EISA 486-25/33

### Enterprise

The Enterprise uses the AMI EISA BIOS with built-in set-up and diagnostics and supports all the new EISA features. The Enterprise is well suited for popular applications relating to CAD, CAM, networking, multi-user and multi-tasking functions.

## The Best Utility in the World! AMIDIAG

The advanced AMIDIAG Utility from AMI is fully menu driven and compatible with 286, 386, 486 machines. In addition to checking system board, memory and peripherals, AMIDIAG also provides a graphical representation of DRAM and SIMM memory error plus error logging on both disk and printer. This utility performs diagnostics for: System board, Memory, Hard Disk, Floppy Drive, Video, and more.  
*PC Magazine*, Aug. '90 writes, "It's simple to use, appears to be extremely accurate, and should be added to your must have list of software."



**EDITORS  
CHOICE**

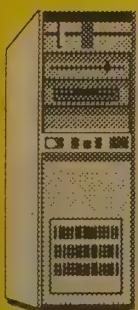
## SEEMS

### Software Emulated Expanded Memory System

EMS 4.0 driver for  
286/386/486  
16 MB Support  
Expanded/extended  
memory

386 code (faster execution)  
Installation program to  
configure for various  
chipsets

## AMI 386SX-20 Cache



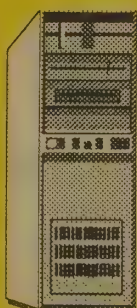
MINI-VERTICAL CASE  
1 MB EXP TO 8 MB  
101 KEYBOARD  
2 SERIAL/1 PARALLEL  
HD/FD CONTROLLER  
1.2 OR 1.44 FLOPPY DRIVE  
PIXEL VGA w/1 MB

**\$1290**

### OPTIONS:

WD 40 MB HARD DRIVE ADD \$240  
100 MB HARD DRIVE ..... 540  
1024x768 MONITOR ..... 350  
4 MB RAM UPGRADE ..... 180

## AMI MkIII 386-25 486 CONVERTIBLE 64K CACHE, UP TO 32 MB ON BOARD WITH PIXEL ULTIMATE VGA 1024x768, 256 COLORS



MINI-VERTICAL/DESKTOP CASE  
1 MB EXP TO 32 MB  
101 KEYBOARD  
2 SERIAL/1 PARALLEL  
HD/FD IDE CONTROLLER  
1.2 OR 1.44 FLOPPY DRIVE  
PIXEL VGA w/1 MB

**\$1690**

### OPTIONS:

WD 40 MB HARD DRIVE ADD \$240  
100 MB HARD DRIVE ..... 540  
1024x768 MONITOR ..... 350  
4 MB RAM UPGRADE ..... 180

## AMI MkII F4 386-33 WITH PIXEL ULTIMATE VGA 1024x768, 256 COLORS



DESKTOP CASE  
1 MB RAM  
101 KEYBOARD  
2 SERIAL/1 PARALLEL  
HD/FD CONTROLLER  
1.2 OR 1.44 FLOPPY DRIVE  
PIXEL VGA w/1 MB

**\$1990**

### OPTIONS:

WD 40 MB HARD DRIVE ADD \$240  
100 MB HARD DRIVE ..... 540  
1024x768 MONITOR ..... 350  
4 MB RAM UPGRADE ..... 180

## 486 SYSTEMS CALL FOR CONFIGURATIONS



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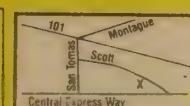
**USM SANTA CLARA**  
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Santa Clara, CA 95054  
408-376-0911  
FAX: 408-980-0604



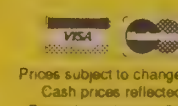
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Restocking charge 15%



# A Visit To C

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## At Home With Jerry Pournelle

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By Wayne A. Yacco

Photos: Ann Summa





# Chaos Manor:



**J**erry Pournelle is the author of two of the industry's most-read computer columns (in *BYTE* and *Infoworld*) and a widely sought-after speaker. He is also a best-selling author of science fiction novels, and the first computer he used to write them on is now in the Smithsonian Institution. As chairman of the Citizen's Advisory Council on Space Policy, he advises presidents and the Congress on such things as the Strategic Defense Initiative (SDI).

I arrive at Chaos Manor, Pournelle's residence, a few minutes before our 11:15 a.m. appointment and am met at the curb by photographer Ann Summa. With another job scheduled that same afternoon, she had wanted some time to set up her equipment prior to the shoot and had come a little early. But there has been no response to her knocks or the doorbell. About 11:12, I begin knocking and ringing. Nothing happens.

While we're wondering what to do, the local mail carrier arrives with a large stack of mail. "Jerry gets started late," he tells us. Exactly three minutes later, after some more knocking, the door is opened by the Pournelles' housekeeper. A moment later, Pournelle appears. He is expecting co-author Larry Niven to arrive soon—they are collaborating on their latest book.

Eventually Niven arrives. Pournelle introduces us, "This is Wayne Yacco. He wishes he had my job, but he just got in it too late." Niven nods and settles down at a computer across the large room.

## What book are you working on now?

This morning we are doing a book called *Fallen Angels*. It's sort of our gift to science fiction fandom. About half the people we know are in it. Mostly as minor characters.

This is the book on how science fiction fans save the world from Proxmire. It isn't quite like that because it's a bleak world: The ice ages are coming—which is possible you know. In the historic real world, Britain went from a climate not unlike what it is today to being under ice in under a hundred years. These things were not slow.

Anyway, in this book, the ice is coming. There are rudimentary space colonies that are just hanging on by their fingernails, and the earth hates them. And Proxmire and the ignoramuses are in charge.

We just mean Proxmire as a generic term. We're using his name but not as a character. It's a verb, as in "proxmired."

So, anyway, the book we're doing is one that is set in a fairly bleak world, and the plot is largely that science fiction fans help, if not exactly save the world—at least keep it going for a while.

## They get a budget passed in Congress, is that the idea?

Uh-uh. [In a very loud and rising voice.] They're criminals. They're under ground. Nobody loves 'em.

## Oh, much as they are today.

Worse than today. You won't get jailed for reading science fiction, but you'll certainly get fired. The "Greens" are in charge in the United States, see. Fantasy's all right, but hard science fiction, that's being pro-technology.

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# Uncle Ralph's

THE BEST OF THE  
**1990**  
EAST BAY

Express Reader's Poll

# SATISFACTION

# 7

**GREAT  
REASONS  
TO  
SHOP AT**

Uncle Ralph's

## 1. Everything's quality-tested by fanatics

We pre-screen everything we sell for compatibility & reliability because we hate problems even more than you do!

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We'll match any local authorized dealer's price! We'll even protect you against lower advertised prices for 30 days after you buy. We deliver on our promise of low prices!

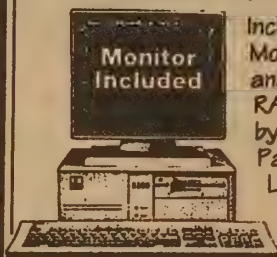
## 3. Money back if not delighted

**10 day refund & 30 day exchange**

If your new purchase isn't exactly what you need you can bring it back for a refund, or trade it in for a television, a stereo, or a fax machine! This is Uncle Ralph's, and we must have something you want!

### PANASONIC-XT COMPLETE WITH MONITOR

*This complete computer system has everything you need to get started for a super low price.*

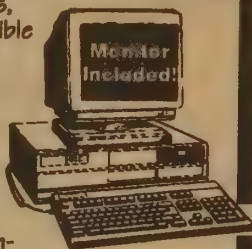


Includes Monitor, DOS, and 640k RAM. Backed by a 1 Year Parts and Labor Warranty.

**COMPLETE SYSTEM**  
**Panasonic** **\$499**  
\$25/Month

### DTK 286 COMPUTER COMPLETE WITH 40 MB HARD DRIVE AND MONITOR

From one of the world's largest computer makers, this IBM compatible comes complete with serial and parallel ports, 1.2MB floppy drive, 1 MB RAM, 40 mb hard drive, and hi-res monitor. Includes 1 year warranty.



**COMPLETE SYSTEM**  
**READY TO GO** **\$999**  
\$50/Month

### ALR POWERFLEX 386 SX Easily Upgrades to a 486

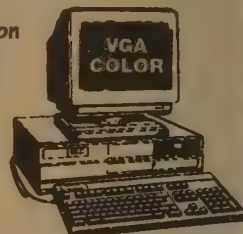
The highly reviewed ALR powerflex computer can grow with you. Right now it's one of the best 386's on the market. Later, when you're needs expand just plug in a card and it becomes a 486. System includes 40MB hard drive and monitor.



**COMPLETE SYSTEM** **\$1,599**  
\$80/Month  
**Take It Home With You**

### UNCLE RALPH'S/MYLEX 386SX WITH 45 MB HARD DRIVE, 3.5" & 5.25" FLOPPY DRIVES, 2 MB RAM & VGA COLOR MONITOR

One of the best made computers on the market. It's has a Mylex/USA motherboard so it's dependable, and very fast, plus it comes with a great keyboard, and a superbly crafted "accu-fit" case. Complete system includes parallel and serial ports, 2 MB RAM, 1.2MB floppy drive, fast 45 MB hard drive, VGA color monitor, and Uncle Ralph's helpful support and service.

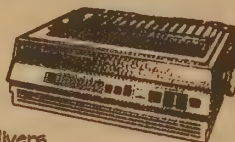


**COMPLETE SYSTEM** **\$1,799**  
\$90/Month

## PRINTERS FOR EVERY JOB

### PANASONIC'S OUTSTANDING NEAR LETTER QUALITY PRINTER

Here's a great buy on our most popular printer. Delivers excellent "near letter quality" print, and zooms along at 192 cps in the draft mode. Includes automatic tractor feed with paper parking and self loading.



**Panasonic** **2 Year Warranty!**  
**\$178**

### STAR MICRONICS 24 PIN LETTER QUALITY PRINTER

Delivers excellent "letter quality" print at 60 cps, or draft quality at 180 cps. Includes automatic tractor feed with paper parking and self loading.



**star** **\$249**

### BROTHER'S TOP OF THE LINE, HI-SPEED LETTER QUALITY PRINTER

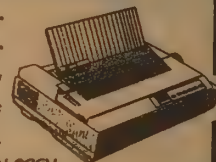
Our best 24 pin dot matrix printer produces text and graphics that are good enough for desk top publishers. It's very fast (300cps) easy to use, and perfect for high output users.



**brother** **\$469**  
\$23/Month  
**COLOR UPGRADE AVAILABLE \$75**

### BROTHER'S 360 CPS, WIDE CARRIAGE PRINTER EXTRA STEADY TRACTOR FEED

If you need a printer with a beefy tractor feed that is practically "jam-proof", you'll love this Brother. It's fast, relatively quiet, and very easy to use. Comes with excellent letter quality & near letter quality fonts.



**brother** **\$699**  
\$35/Month

## LAPTOP COMPUTERS

### IT'S HERE! THE 4 LB 286 LAPTOP FROM SHARP

It's finally here. The 4.4 lb wonder. Sharp's new 8 1/2" x 11" notebook computer. 286 power, a phenomenal backlit VGA screen, 20mb hard drive, and a ton of personality!



**GUARANTEED LOWEST PRICE!**

### PANASONIC'S WONDERFUL NOTEBOOK

This tiny laptop is barely bigger than a notebook, but it's fast, fun, and has a new easy to read backlit screen. Includes 640k/RAM, AC adaptor and battery charger, and DOS.



**Panasonic** **\$699**  
\$35/Month

### MITSUBISHI PORTABLE 286 COMPUTER, 20 MB HARD DRIVE, EGA SCREEN & MODEM

This complete package includes Mitsubishi's excellent 286 laptop computer, modem, carrying case, Microsoft Works, MS-DOS, and a terrific screen. AC only.



**MITSUBISHI** **\$1,869**  
\$93/Month

### TANDON 386SX LAPTOP COMPUTER

This is a really neat computer. Runs on AC or 3 hour batteries, has a terrific new VGA screen that refreshes itself in half the normal time. Includes 40MB hard drive and MS-DOS.



**Introductory Special!**  
**\$2,399** \$120/Month

### ALTIMA II with AC/DC DICONIX PRINTER

The Mercedes Benz of Laptops! Here's one of the most wonderful laptops ever! It has a removable keyboard with a standard enhanced key layout. The VGA screen is bright and razor sharp. 2400B modem, 40MB hard drive, mouse and case come standard. You'll also get an AC/DC Diconix printer worth \$500 free from Altima.

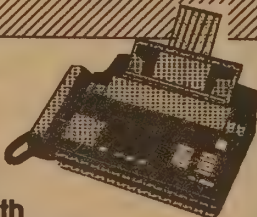


**altima** **Call for New Low Price**

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### PANASONIC FAX WITH ANSWERING MACHINE

**Panasonic** **\$449**  
\$24/Month



### MURATA FAX WITH DOCUMENT FEEDER AND PAPER CUTTER

Transmit and receive documents from around the world. Built in telephone, copier and 5 page document feeder.



**\$499** \$25/Month

### AUDIOVOX FAX WITH PAPER CUTTER & SPEAKERPHONE

- 110V - 220V Switchable
- Hooks up to Answering Machine
- Half-tones • Papercutter
- 100 Number Memory
- Speakerphone



**\$749** \$37/Month



# GUARANTEED!

Uncle Ralph's

## 4. One hour repair service

If you have a problem with one of our computers we can usually have it fixed within 1 hour. It's important to us that our customers remain satisfied.

## 5. 90-day interest-free financing

You can defer payment for 90 days and pay no interest at all! Or you can charge it to your Uncle Ralph's credit card account. Sometimes we even take cash! Subject to lender approval.

## 6. Open 7 days a week

We're open for you 7 days a week—til 8 pm Monday through Friday, and til 6 pm on weekends.

## 7. We'll keep you satisfied!

We've been putting smiles on faces for 8 years. We know what it takes to do a good job...and we do it everyday!

## SAVE ON DISKETTES!



(BOXES OF 10, LIFETIME GUARANTEE!)

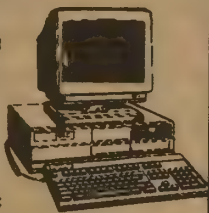
TDK 3.5" 720K.....\$7.99

TDK 3.5" 1.44.....\$16.95

TDK 5.25" 1.2MB.....\$9.95

**U.R./MYLEX 386/20, STATIC RAM CACHE, 68 MB HARD DRIVE, 4 MB RAM, 3.5" AND 5.25" FLOPPY DRIVES & VGA COLOR MONITOR**

A lot of computer, built exclusively with top brand components. The Mylex/USA motherboard has 8 layers & a 64K static RAM cache. We use Teac floppy drives and a fast Toshiba hard drive. The complete system includes our top of the line keyboard and case, game, parallel, and two serial ports. 1 year Warranty

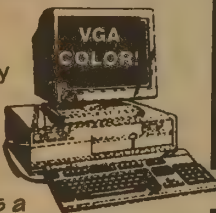


**COMPLETE SYSTEM \$2,495**

Take It Home TODAY \$125/Month

**UNCLE RALPH'S 25MHz 386 WITH 100MB CONNER HARD DRIVE, 4MB RAM, 2 FLOPPY DRIVES, AND VGA COLOR MONITOR**

Here's a lot of computer for a very sharp price. It's based on DEICO/USA's excellent 8 layer motherboard, and includes a 100MB CONNER hard drive, 2 TEAC floppy drives, enough RAM for high speed compiling and multi-tasking, your choice of excellent keyboards, parallel and 2 serial ports, and VGA monitor.



**COMPLETE SYSTEM \$2,699**

\$135/Month

**U.R./OMNITEL 33 MHz 386 with STATIC RAM CACHE, 100MB HARD DRIVE, 4MB RAM, 2 FLOPPY DRIVES, & 1024x768 VGA COLOR MONITOR**

The OmniTel motherboard has been making some big waves lately and we've packaged it with other excellent components to create a high performance system. Complete system includes Conner hard drive, Viewperfect monitor, 512K VGA card, parallel, game, and 2 serial ports, and your choice of excellent keyboards.



**COMPLETE SYSTEM \$3,295**

\$165/Month

## UPGRADE TO THE FASTEST 486 MOTHERBOARD

The fastest rated 486's on the market are built around the Mylex 486 motherboard, and now this board is available for installation in almost any 286 or 386 clone. Includes 4 MB RAM (upgradeable to 32 MB) 128k Static RAM cache, and the industry's only Burst Mode EISA bus.

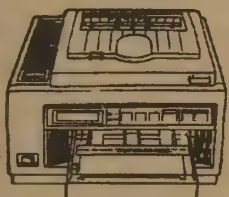
**MYLEX \$3,999**  
\$200/MONTH  
ORDER YOURS TODAY

## LASER PRINTERS and ACCESSORIES

**PANASONIC 8 PAGE/MINUTE LASER PRINTER**

**Panasonic**

True laser output, 11 resident fonts, HP laserjet II emulation, 250 page paper tray, 512k RAM. Designed for high output applications, and perfect for busy offices.

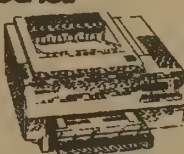


**\$789 \$39/Month**

**BROTHER'S TOP RATED LASER PRINTER**

**brother**

This terrific laser printer has collected Editor's Choice awards from virtually all major computer mags. It runs on the reliable Canon engine, has eight major emulations including HP Laserjet II and HPGL, includes 44 resident fonts, enough memory to do full page graphics straight out of the box, and a super sharp image.



**\$1,299**

\$65/Month

**SUPER-FAST EVEREX/ABATON POSTSCRIPT LASER PRINTER**

This new introduction from Everex may be the best Postscript buy to date. Scales text fonts and graphics to any size with unusually sharp image, and unlike most postscript printers it's very fast.



**\$1,899**

\$95/Month

**PACIFIC PAGE FONT CARTRIDGES AND MEMORY UPGRADES**

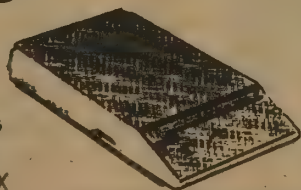
- Postscript Language Emulation
- Headlines in a Cartridge
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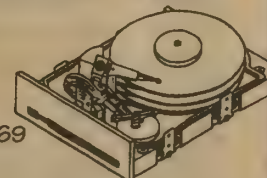
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Jerry Pournelle is obviously pro-technology. Aren't things beginning to swing in favor of technology again?

But, you know, science fiction is not about what will happen; it's about what could happen.

Your computer writing seems to focus on our industry's analog of fans—end-users.

That's all I do. That's all I write basically. You've got to remember, the column I do at *BYTE* was originally entitled "The User's Column."

What year was that?

When did I start it? '79.

Phil Lemons [former *BYTE* Editor], for reasons that are not totally clear to me, took ... I use the appellation Chaos Manor for this place, and now that you've been in it, I think you can see that it fits, huh?

From the state of all the desktops at least.

Well, this part of it ... My wife tries valiantly to keep the chaos out of the living room, but she doesn't always succeed. I mean, how many other places do you have where a wolf is pacing back and forth to see what's going on. [As he speaks, his Siberian Husky—Sasha, one eye brown, the other bright blue—is reconnoitering the author's second-floor aerie, and breathing heavily into one of the tape recorders.]

Anyway, Phil, for reasons that are not clear to me, thought it would be popular to change the name of the column to "Computing at Chaos Manor." Well, they were paying me enough money that I went along. So, it is now "Computing at Chaos Manor," but I still think of it as "The User's Column."

Where do you think that end-user computing is going?

I said it in 1979. By the year 2000, anybody in western civilization will be able to get any answer to any question they want. I mean that almost literally—almost any answer—and I don't think that's been thought through.

Let me point out to you that I have, in this room—over there, the machine that Larry is working on, using it as a dedicated word processor—a machine that is more powerful than any machine that existed, really, when I started writing the column.

Any machine, including mainframes?

Yeah. It doesn't have the capability for eight million input lines. I mean, mainframes are still very good in being able to handle point-of-sale entry and, you know, millions of little input lines. That's all they're good for.

For sheer processing power, that '486 over there—it's got more memory on its disk controller board than mainframes had. The hard disk in that machine is a gigabyte.

A mainframe might have had 4Mb during the '70s—if it was especially large.

And I've got 4Mb on the disk controller on that machine. There's 16Mb of main memory.

What do you think about the race between MCA and EISA?

I don't think MCA is going anywhere, is it? Historically it hasn't gone anywhere. We'll see. I think there's an enormous investment in the old bus, and I have not noticed very many ... The clue is when the third parties jump in. How many third-party vendors of MicroChannel stuff do you know? How many board makers are there? A thousand?

**"I get static from people saying 'You know, you're writing about this stuff we can't afford.'**

**And I point out to them that what I'm writing about this year, you can't afford. Two years**



**from now you will be able to afford it.**

**Three years from now you won't know how you lived without it."**

What attracts you to a particular technology or vendor?

They're reliable. That's the whole point. I am not an experimentalist. I don't have time to put in stuff that won't work. As a consequence, I tend to adopt certain companies I have confidence in. I know that if they deliver me a machine, I'm not going to be sitting here cursing it the next day.

A lot of people read what I say and take it seriously, and I really hate it if I get a letter from somebody saying, "You told me that I should go buy this. And I went and bought it. And I hate it. And let me tell you why." And they tell me why, and it's a very legitimate letter. I don't like that. I only have, maybe, a dozen letters like that in the eleven years I've been in this business. But I don't like any of them.

Is that because you feel you've let just those few readers down?

Yeah. Yeah. Even if it happens that the guy didn't read very closely. Some of the worst cases have been with the Amiga. The Amiga's a wonderful machine if you like to fool with your machinery, but I wouldn't recommend that a bank or a gal that wants to do a word-processing company... I wouldn't recommend that machine to them.

It's sure high-end equipment for a low price. You get a lot of bang for the buck with an Amiga, but you better want to know how it works. Now a lot of *BYTE* readers are that way, and that's fine. But, unfortunately, a lot of *BYTE* readers are also people who are just trying to get started and they buy a magazine, and they end up in my column, because it's the only thing in the magazine they understand. They

read that and, if I am not very careful in what I talk about, they might go out and buy something that is meant for the general *BYTE* reader and not for the guy who just bought. You see what I mean? And then he writes me a letter saying "You dirty so and so." I hate that. I really hate that.

Do you see end-user computing continuing as it is now, or do you think virtual reality or something else will replace it as popular culture—and what do you see happening with computer magazines as a result?

You know, historically *BYTE* has done better than the others over the long haul. The ones that have a machine architecture in their name are only rivals really. And the reason for it is because we do try to emphasize what's going to happen, what's coming up. And at the same time, you've got anchors like me—I know I'm an anchor; I mean I'm kind of a prophetic anchor.

I get static from people saying, "You know, you're writing about this stuff we can't afford." And I point out to them that what I'm writing about this year, you can't afford. Two years from now you will be able to afford it.

Three years from now you won't know how you lived without it. Somebody has got to take this new stuff and turn it into usable products as opposed to high-end visionary stuff. Well, I conceive it as my job, and I conceive that as *BYTE*'s job, to help drive this industry in a direction that's useful to all of us.

Do you think *BYTE* and these other magazines will still be here unchanged in the future?

*BYTE*'s just had its best year. *Infoworld* is doing well. Those are the two that are doing well. Those are the ones I'm in. Maybe there's a connection. [Laughs wickedly] I like to think so.

But do you think that virtual reality, or something else, will replace the popular computing magazines we have now?

Yes, I do, but I don't think it's going to affect those two books. Some of those MIS-type, you know, mini-mainframe-type magazines, I



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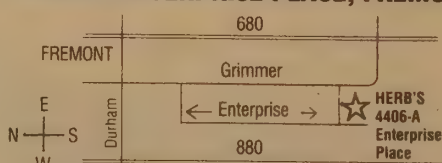
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think are the next target for things like *Infoworld*.

If the cover says "Mini" or "Mainframe," they might disappear?

Yeah, that's it. I think that *BYTE* and *Infoworld* are moving in on that territory now. Well, look over there, for God's sake. There is a machine, over there in the corner, that is more powerful than a Vax was ten years ago. OK, so the Vax has given new life to the mini for a while. How are you going to keep it up?

How did you get started writing about computers?

Oh, I've told that story several times. I had a mad friend named MacLean, he's dead now, and Dan came over one day and said, "I've got a new personal computer." He had got a kit actually. Somebody had been trying to build a kit and couldn't finish it and just gave him the whole works.

And Dan was saying, "You're going to look at this thing, huh?" And I said, "You're crazy. I've got zero interest in this nonsense," you know. And he said, "Yeah, but look." And the next thing I know, I saw Electric Pencil running, and I realized, as a writer, that this was the answer to a writer's dream. I would never have to retype a page again. You really hate it if you tear apart a page and now you've got to retype the pieces that you haven't changed. God, I hate that. So, we got it set up. We got it running. That's the one that's in the Smithsonian.

You mentioned earlier that your work involves you with visionary products. What are some of the products, that are available right now, which fit that profile?

Communications. The whole dang communications field. In fact, I'm probably going to write a book for Microsoft Press on the future of the communications business: coprocessing and communications, Intel's coprocessing stuff, that type of thing.

Background communications, electronic mail?

Mhmm. Mhmm. And distributed computing inside your own machine. Nobody, deep down inside, wants to timeshare, even with himself.

That Intel Coprocessor board which they did about two years ago—you just drop the damn thing in. It broadcasts fax if that's what you want it to do. You tell it, you know, "At 2:30 this afternoon, we want you to try to send this fax to the following five numbers and keep doin' it, keep trying until you get through." And then you go on about your business. You never even notice it's doing it. I mean, it ties up a phone line but, beyond that, you don't know it's doing it.

Now, that's my notion of what computer communications ought to be all about. You just tell the machine, "Go clean out my electronic mail box at four o'clock in the afternoon, and here is the priority list. If there's anything from the following people, interrupt what I'm doing and beep at me. Otherwise, leave it in the background until I get at it. Remind me it's there when there's an obvious break—like when I reenter DOS or something. Pop up a message saying, 'You have mail here and here's where it's from.'" That type of thing. All that's doable right now. There's a program called Automator that does it. There's half a dozen others.

What other trends do you see?

Most of the trends are obvious, aren't they? The machines get more powerful and cheaper. It has been true, and it will be true, and it will continue to be true for another four or five cycles. At that point it's going to have to stop. You have to go to a new technology because you're up against the speed of light.

On the other hand, Danny Hillis's Connection Machine, Thinking Machines, that type of thing, they are what... They're several million bucks for a machine that is now the equivalent of the Cray, easily, and there is no reason to believe that you will not be able to put a Connection Machine on a single chip. A Connection Machine uses thousands of parallel Z80s basically. Well, a little more powerful, but it's sort of like having thousands of Z80s sitting there. Until recently that stuff tended to be immune to programming, but they're learning



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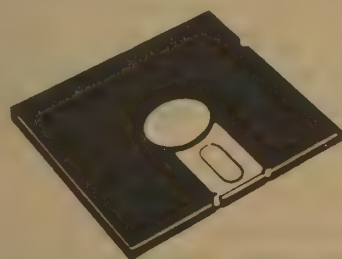
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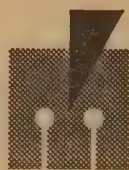
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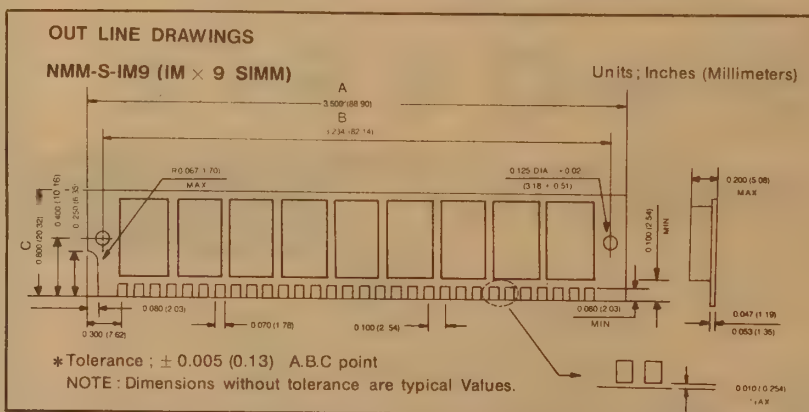
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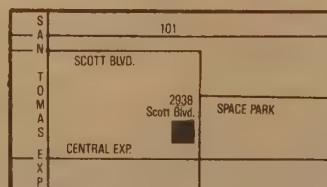
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how to do it. Well, that's the next step, to be able to do these damn things in languages that are much more amenable to...

We're getting there, aren't we? I mean, Mathematica is a great forward step. There is MathCAD. You sit there and write a document. You put equations into the damn thing and when you're finished with it, there it is. I mean the physics problem that's in your undergraduate text book can literally just be typed into this darn fool thing and, when you're finished with it, the answer's there. MathCAD is the simplest program in the world.

The capabilities are going up and up and up without limit and that's the next step. I've said this many times and nobody believes me. For a very long time the ability to read and write was sufficient to make one a member of the upper class, the ruling class. That hasn't been true for some time. That's just as well, because our rotten school system is producing illiterates on a monotonically increasing function. Isn't it interesting, by the way, the amount of money we give to the schools. The more money we give 'em, the more illiterates they turn out. It's as if we were buying illiteracy.

Now, the ability to program is sufficient to get you a good job. It doesn't make you a member of the ruling class, perhaps, but it makes you part of the technological elite. You're guaranteed a pretty good position, right, if you're willing to do it. I think that thirty years from now, except for systems programmers—I think it's going to be like being able to read and write. On the other hand, programming's going to be easier.

You cited communications as a hotbed of development. Networking is a big part of that. Are you networked?

Ahh, can be. I generally do not leave the wires attached, and that has to do with propagation of viruses. I am a bigger target than a lot of people.

Do you play with unsolicited programs, loose disks, not just shrink-wrapped product?

Well, I have to. So, I have one machine that nothing important is on. I've probably reformatted that thing's hard disk once a month.

And these programs are sent by strangers?

Sometimes maliciously. Oh, yeah. Well look, let me show you. [Pournelle takes us into an adjoining room, filled practically to the ceiling with boxes, mostly hardware. He shows us some mail on top of a large pile. It includes several seedy-looking disks with hand-lettered labels. They are filled with the hopes of their authors.]

Here is a couple of days' mail.

Are these all sent to you by companies?

No, by kids, some kid in his garage. Now, there may be, in there, the Israeli virus, and there may be, in there, the next dBASE.

You've got to remember, I discovered dBASE. A man named Wayne Ratliff had a program named Vulcan which nobody had ever heard of before. I did a review of it—first review ever done of Vulcan—and a man named George Tate read the review; said, "I like it"; went and bought the damn program from Ratliff. And the result is the Ashton-Tate company.

You talked earlier about minis and mainframes having a lot more I/O capability than micros. Some micro companies are addressing that very issue with drive arrays. Have you seen any of these yet?

Well, as a matter of fact, I have, in the next room, exactly what you're talking about. I haven't got it set up yet. In the next room, I also have a Pioneer CD-ROM changer. A jukebox for CD-ROMs. I'm talking about 600Gb of information available within seconds.

What about that drive array?

Let's say I break my own stories. Watch my columns. ■



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## 486-25 MHz System

- 1 MB Expandable to 16 MB
- Landmark=115
- Teac 1.2 MB or 1.44 MB Floppy Drive
- 1:1 Interleave FD/HD Controller
- Serial, Parallel, Game Port
- 101 Keyboard
- Case w/Power Supply

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## 386-33 MHz 64K Cache System

- 1 MB Expandable to 8 MB
- 64K Cache Memory
- TEAC 1.2 MB or 1.44 MB Floppy Drive
- 1:1 Interleave FD/HD Controller
- Serial, Parallel, Game Port
- 101 Keyboard
- Case w/Power Supply

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## 386-25 MHz 64K Cache System

- Intel 25 MHz CPU, 64K Cache
- 1 MB exp. to 8 MB
- Hard/Floppy Controller (1:1)
- Serial, Parallel, Game Port
- 101 Keyboard
- Teac 1.2 MB or 1.44 MB Floppy Drive
- Case w/Power Supply

**\$1189**

## 386-25 MHz System

- Intel 25 MHz CPU
- 1 MB RAM on board
- Hard/Floppy Controller (1:1)
- Teac 1.2 MB or 1.44 MB Floppy Drive
- Serial, Parallel, Game Port
- 101 Keyboard
- Case w/Power Supply

**\$975**

## 386-SX 16 MHz System

- Intel 386-SX CPU
- 1 MB RAM on board, Landmark=21.6
- Hard/Floppy Controller (1:1)
- Teac 1.2 MB Floppy
- Serial, Parallel, Game Port
- 101 Keyboard
- Choice: Regular Baby Case or Small Vertical Case

**\$650**

## Super Fast 286-20 MHz Neat System

- True 20 MHz Harris CPU
- C&T (Neat) 20 MHz Chip Set
- EMS; LIM 4.0; Landmark=26
- 512K exp. to 8 MB on board; Interleaved Memory
- 1.2 Floppy Drive; HD/FD Controller
- 101 Keyboard
- Choice: Regular Baby Case or Small Vertical Case

**\$655**

## 286-12 MHz System

- 512K RAM Exp. to 4MB
- 1.2 MB or 1.44 MB Floppy Drive
- 1:1 Interleave HD/FD Controller
- 101 Keyboard
- Choice: Regular Case, Baby Case or Small Vertical Case

**\$379**

## Turbo 10 MHz System - CALL

## Hard Disks

|                  |      |
|------------------|------|
| ST-225 (20M)     | 185  |
| ST-225 Kit       | 239  |
| ST 238 (30M) Kit | 275  |
| ST-251-1 (40M)   | 255  |
| ST 4096 (80M)    | 545  |
| Toshiba 44/66 MB | 340  |
| NEC 40/66 MB     | 340  |
| Micropolis (71M) | 545  |
| 40M (IDE)        | 255  |
| Conner/Maxtor    | CALL |

## Floppy Drives

|                    |       |
|--------------------|-------|
| Teac 360K/1.2K     | 65/67 |
| Teac 720K/1.44K    | 68/67 |
| Toshiba 720K/1.44K | 68/69 |
| Fujitsu 360K/1.2K  | 60/69 |
| Epson 1.2K/1.44K   | 65/65 |

## Monitors

|                           |         |
|---------------------------|---------|
| MONO (Hyundai 12")        | 69      |
| MONO (Samsung 14" Flat)   | 99      |
| EGA (Relisys)             | 335     |
| VGA (Hyundai)             | 310     |
| VGA (Relisys)             | 330     |
| VGA (View Sonic)          | 320     |
| VGA                       | 285     |
| Super VGA (0.28-1024x768) | 375     |
| Multisync (Relisys)       | 420     |
| NEC 2A/3D                 | 495/599 |

## Add-On Boards

|                                          |     |
|------------------------------------------|-----|
| Mono Graphic w/PP                        | 30  |
| Color Graphic w/PP                       | 35  |
| video / (800x600)                        | 90  |
| Everex EGA (640x480)                     | 71  |
| Everex EGA with PP                       | 79  |
| VGA-16 Bit Trident                       | 115 |
| VGA-16 Bit Paradise OEM                  | 125 |
| Orchid ProDesigner VGA-16 Bit            | 185 |
| Orchid Pro Designer II 512K              | 225 |
| FD/HD 1:1 Controller                     | 70  |
| AT I/O (2S;1P;1G)                        | 30  |
| XT Multi I/O                             | 39  |
| Floppy Controller (360, 720, 1.2, 1.44K) | 35  |
| Floppy Controller (360K)                 | 16  |
| XT-H/D Controller WD-Gen                 | 50  |
| WA3 FD/HD Controller                     | 83  |
| DTC 7280 MFM FD/HD (1:1)                 | 89  |
| DTC 7287 RLL FD/HD (1:1)                 | 105 |
| ST-02 SCSI Adapter                       | 65  |
| Printer/Serial/Game                      | 18  |
| Everex RAM 3000 Deluxe                   | 98  |
| Everex RAM 10000                         | 158 |

## Printers

|                         |         |
|-------------------------|---------|
| Panasonic KX-1180       | 162     |
| Panasonic KX-1124       | 280     |
| Panasonic KX-1524       | 395     |
| Panasonic KX-1624       | 375     |
| Star NX-1000 II         | 165     |
| Star NX-1000 Color      | 215     |
| Panasonic KX-4420 Laser | 890     |
| Panasonic KX-4450 Laser | 1395    |
| Citizen GSX 140/Color   | 295/345 |
| Citizen GX 200/Color    | 185/235 |

## Modems/Fax Cards

|                             |           |
|-----------------------------|-----------|
| Everex 1200 Baud (int)      | 54        |
| Everex 2400 Baud (int)      | 115       |
| Everex 2400 Baud MNP5 (ext) | 195       |
| Everex 2400 Baud MNP5 (int) | 150       |
| Everex 2400B (ext)          | 165       |
| Everex Fax Modem            | 275       |
| CEI Pocket Modem            | Call Now! |
| Ext 2400 Baud Modem         | 100       |
| Int. 2400 Baud Modem        | 88        |

## Motherboards

486, 386-Variou Make/Speed  
286-10,12,16,20 Neat  
XT-10 MHz

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## Miscellaneous

|                           |       |
|---------------------------|-------|
| Logitech Track Man        | 85    |
| Logitech Scan Man Plus    | 165   |
| Logitech Scan Man         | 125   |
| Logitech Hi-Res Bus Mouse | 55    |
| Logitech C9 Serial/Bus    | 68/73 |
| Color Mouse               | 35    |
| XT Power Supply           | 36    |
| AT Power Supply           | 48    |
| Tape Back Up 40/60/120 MB | 285   |
| Tape Int. Controller      | 83    |
| Tape Ext. Controller Kit  | 125   |

## Cases

|                          |     |
|--------------------------|-----|
| Big Vertical Case w/PS   | 180 |
| Small Vertical Case w/PS | 110 |
| Deluxe Baby Case w/PS    | 95  |
| Regular AT Case w/PS     | 95  |
| Deluxe XT Case           | 35  |

## Keyboards

|                                |    |
|--------------------------------|----|
| 102 Key with Cherry Key Switch | 53 |
| Keytronic 101 Key              | 48 |
| Mitsumi 101 Key                | 42 |
| Enhanced 101 Key               | 36 |

## Memory/Chips

|                |      |
|----------------|------|
| 80287/80387    | CALL |
| Dram/Simm/Sipp | CALL |

## Network Cards

|                          |         |
|--------------------------|---------|
| Everex Ethernet 8/16 Bit | 165/265 |
| SMC Ethernet             | CALL    |

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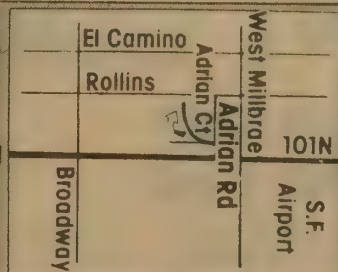
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Cache)

- 1 MB Expandable to 16 MB
- Landmark=115, MIPS V. 1.3=11.4
- Shadow RAM
- Support External Weitek 4167
- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave HD/FD Controller
- 2S, 2P Port
- 101 Enhanced Keyboard
- Support MS-DOS, OS/2, Unix, Xenix
- Manufactured In USA

486-33 MHz \* CALL

\$3199

### 486 EISA-25 MHz

- 1 MB Expandable to 16K MB
- Landmark=115, MIPS V. 1.3=11.104
- Eight 32 Bit EISA Slots
- Support up to 6 Bus masters
- Support 80486 Burst Mode
- Shadow RAM, Support Weitek 4167
- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave HD/FD Controller
- 2S, 2P Port
- 101 Enhanced Keyboard
- Supports MS-DOS, OS/2, Unix, Xenix

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### 386-33 MHz 64K Cache

- 1 MB Expandable to 8 MB
- 64K Static Cache Memory
- Landmark=54
- Shadow Ram
- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave HD/FD Controller
- Socket for 80387
- 2 Serial, 1 Parallel, 1 Game Port
- 230 W Power Supply
- 101 Enhanced Keyboard
- Supports MS-DOS, OS/2, Unix, Xenix
- Manufactured in USA

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### 386-25 MHz 64K Cache

- 1 MB Expandable to 8 MB
- 64K Static Cache Memory
- Landmark=43.5
- Shadow Ram
- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave HD/FD Controller
- Socket for 80387
- 2 Serial, 1 Parallel, 1 Game Port
- 230 W Power Supply
- 101 Enhanced Keyboard
- Supports MS-DOS, OS/2, Unix, Xenix
- Manufactured in USA

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- Ni-Cd Rechargeable Battery
- Connector for External Monitor
- Dimension: 16"x12.8"x3.1"
- Weight: 14.8 lbs

### 286-20 MHz 0 Wait

- Landmark=26.5
- 512K Expandable to 8 MB
- Chip & Tech. NEAT Chip Set
- Shadow RAM for fast BIOS Access

- Page Interleaved Memory
- 1:1 HD/FD Controller
- 1.2 or 1.44 MB Floppy Drive
- 230 W Power Supply
- 101 Enhanced Keyboard

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### 286-16 MHz 0 Wait

- Landmark =21
- 512K Expandable to 4 MB
- Real Time Clock
- 8 Expansion Slots
- 80287 Socket

- 1:1 HD/FD Controller
- 1.2 or 1.44 MB Floppy Drive
- 230 W Power Supply
- 101 Enhanced Keyboard

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### 8088 10 MHz System

- DTK 4.77/10 MHz Motherboard
- 256K RAM Expandable to 640K

- Fujitsu 360K Floppy Drive
- 101 Enhanced Keyboard
- 165 W Power Supply
- AT Jr. Case

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## 386-25 MHz

- Landmark=34.5
- 1 MB Expandable to 8 MB
- Shadow RAM, Page Interleaved Memory
- Socket for 387, Weitek 1167
- Shadow RAM, Page Interleaved
- 1:1 Interleave HD/FD Controller
- 2 Serial, 1 Parallel, 1 Game Port
- 1.2 or 1.44 MB Floppy Drive
- 230 W Power Supply
- 101 Enhanced Keyboard
- Supports MS-DOS, OS/2, Unix, Xenix



**\$719**

## 386-SX 20 MHz

- Landmark=26.5
- 1 MB Expandable to 8 MB
- Chip & Tech. NEAT Chip Set
- EMS LIM 4.0 Built-In On Board
- Shadow RAM
- Page Interleaved Memory
- 1:1 HD/FD Controller
- 1.2 or 1.44 MB Floppy Drive
- 2 Serial, 1 Parallel, 1 Game Port
- 230 W Power Supply
- 101 Enhanced Keyboard
- Supports MS-DOS, OS/2, Unix, Xenix

**\$669**

## 386-SX 16 MHz

- Landmark=23.5
- 1 MB Expandable to 8 MB
- Chip & Tech. NEAT Chip Set
- EMS LIM 4.0 Built-In On Board
- Shadow RAM, Page Interleaved
- 2 Serial, 1 Parallel Port
- 1:1 Interleave HD/FD Controller
- 1.2 or 1.44 MB Floppy Drive
- 80387-SX Socket
- 230 W Power Supply
- 101 Enhanced Keyboard
- Supports MS-DOS, OS/2, Unix, Xenix

## 286-12 MHz 0 Wait

- 6/12 MHz 0 Wait
- 512K Expandable to 4 MB
- Landmark=16
- 1:1 HD/FD Controller
- Real Time clock
- 1.2 or 1.44 MB Floppy Drive
- 230 W Power Supply
- 101 Enhanced Keyboard

|                                       |            |
|---------------------------------------|------------|
| 20 MB Hard Disk                       | <b>185</b> |
| 40 MB 28MS Hard Disk                  | <b>245</b> |
| 68 MB 24MS Hard Disk (NEC or Toshiba) | <b>335</b> |

|             |             |
|-------------|-------------|
| 80 MB       | <b>1475</b> |
| 100 MB      | <b>1495</b> |
| 150 MB 18MS | <b>799</b>  |
| 200 MB 16MS | <b>820</b>  |
| 330 MB 16MS | <b>1099</b> |

### Modem

|                              |            |
|------------------------------|------------|
| 2400 Baud (Int)              | <b>75</b>  |
| 2400 Baud (Ext)              | <b>99</b>  |
| Everex 1200 Baud             | <b>55</b>  |
| Everex 2400 Baud             | <b>115</b> |
| Everex Fax Modem             |            |
| (9600 Fax, 2400 Modem, MNP5) | <b>255</b> |

### Keyboard

|                    |           |
|--------------------|-----------|
| Mitsumi 84 Key     | <b>35</b> |
| Mitsumi 101 Key    | <b>39</b> |
| Keytronic 101 Key  | <b>45</b> |
| Maxiswitch 101 Key | <b>45</b> |

### Monitor

|                           |            |
|---------------------------|------------|
| Hyundai Mono              | <b>70</b>  |
| 14" Flat Screen           | <b>95</b>  |
| Samsung Color             | <b>199</b> |
| Hyundai EGA               | <b>310</b> |
| Hyundai VGA 640x450 .39   | <b>285</b> |
| Hyundai VGA               | <b>310</b> |
| Relisys Multisync         | <b>425</b> |
| NEC Multisync 2A          | <b>470</b> |
| NEC Multisync 3D          | <b>615</b> |
| Super VGA (1024x768) 0.28 | <b>395</b> |

### Motherboard

|                                  |             |
|----------------------------------|-------------|
| DTK 8088 10 MHz                  | <b>65</b>   |
| 286 6/12 MHz 0 Wait              | <b>125</b>  |
| 286 8/16 MHz 0 Wait              | <b>185</b>  |
| 286 8/20 MHz 0 Wait              | <b>295</b>  |
| 386SX-16 MHz 0 Wait              | <b>CALL</b> |
| 386-25 MHz 0 Wait (w/o CPU)      | <b>235</b>  |
| 386-25 MHz 64K Cache (w/o CPU)   | <b>345</b>  |
| 386-33 MHz 64K Cache (w/o CPU)   | <b>415</b>  |
| 486-25 MHz Motherboard (w/o CPU) | <b>650</b>  |

### Misc.

|                                             |                |
|---------------------------------------------|----------------|
| 287-8/10                                    | <b>165/170</b> |
| 387-16/20                                   | <b>315/355</b> |
| 387-25/33                                   | <b>430/520</b> |
| 165W (XT) Power Supply                      | <b>35</b>      |
| 230W Power Supply                           | <b>48</b>      |
| Logi Hi-Res Mouse                           | <b>69</b>      |
| Logi Trackman Serial/Bus                    | <b>85/90</b>   |
| DFI Mouse (3 Button, Micro Soft Compatible) | <b>45</b>      |
| AT Jr. Case (XT)                            | <b>32</b>      |
| AT Deluxe Case                              | <b>48</b>      |
| Mini Vertical Case w/Power Supply           | <b>99</b>      |
| Vertical Case w/Power Supply                | <b>170</b>     |
| Colorado 120 MB Tape Back-Up                | <b>265</b>     |
| DFI Memo 2000                               | <b>85</b>      |
| Everex RAM 3000 Deluxe                      | <b>89</b>      |

### Printer

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|---------------------------|------------|
| Star NX-1000 II           | <b>149</b> |
| Star NX-1000 Color        | <b>199</b> |
| Star NX 2410              | <b>249</b> |
| Panasonic KX-P 1180       | <b>155</b> |
| Panasonic KX-P 1124       | <b>279</b> |
| Panasonic KX-P 1624       | <b>375</b> |
| Panasonic KX-P 1524       | <b>375</b> |
| Panasonic KX-P 4420 Laser | <b>849</b> |

### Hard Disk

|                                   |             |
|-----------------------------------|-------------|
| ST-225 (20 MB)                    | <b>179</b>  |
| ST-225 Kit                        | <b>225</b>  |
| ST-251-1 (40 MB, 28 MS)           | <b>249</b>  |
| Western Digital 40 MB IDE (28 MS) | <b>249</b>  |
| Toshiba 134FA (44/66 MB, 24 MS)   | <b>299</b>  |
| NEC 3142 (44/66 MB, 24 MS)        | <b>299</b>  |
| Conner 80 MB                      | <b>475</b>  |
| Conner 100 MB                     | <b>495</b>  |
| Conner 200 MB                     | <b>820</b>  |
| Maxtor 4170E ESDI 150 MB, 14 MS   | <b>850</b>  |
| Maxtor 4380E ESDI 320 MB, 16 MS   | <b>1295</b> |
| Maxtor 8760E ESDI 660 MB, 16 MS   | <b>1850</b> |
| CDC SCSI 150 MB, 18 MS            | <b>850</b>  |
| Fujitsu 330 MB ESDI               | <b>1099</b> |

### Floppy Drive

|                           |              |
|---------------------------|--------------|
| Fujitsu 360K/1.2M         | <b>57/67</b> |
| Teac 360K/1.2M            | <b>62/69</b> |
| Teac/Toshiba 3.5" 720K    | <b>65</b>    |
| Teac/Toshiba 3.5" 1.44 MB | <b>69</b>    |

### Interface Card

|                                    |            |
|------------------------------------|------------|
| Mono Graphic Card                  | <b>25</b>  |
| Color Graphic Card                 | <b>35</b>  |
| Floppy Controller 360/720/1.2/1.44 |            |
| XT/AT                              | <b>33</b>  |
| Everex EGA (640x480)               | <b>69</b>  |
| VGA Card (16 bit 800x600)          | <b>75</b>  |
| Paradise VGA+ 16 (1024x768 OEM)    | <b>99</b>  |
| Everex View Point (1024x768)       | <b>139</b> |
| Orchid Pro Designer II w/1 MB      | <b>265</b> |
| ATI Wonder (1024x768)              | <b>179</b> |
| AT M I/O (2S, 1P, 1G)              | <b>29</b>  |
| WA3 FD/HD Controller               | <b>65</b>  |
| 1:1 FDC/HDC (MFM)                  | <b>65</b>  |
| DTC 7280 1:1 FDC/HDC               | <b>85</b>  |
| DTC 7287 1:1 FDC/HDC (RLL)         | <b>95</b>  |
| DTC 6280 ESDI                      | <b>135</b> |

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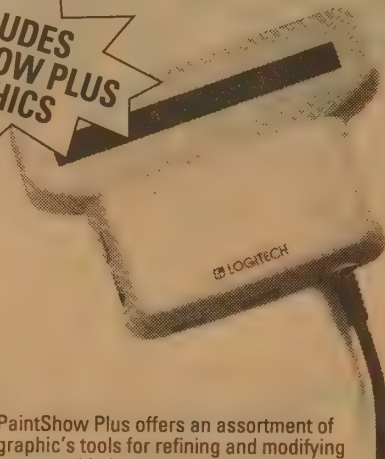
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Use the ScanMan to scan images for use in desktop publishing or for your wordprocessor. Everything you need to scan, edit, save, and transfer your image into popular graphics, DTP or WP programs is included. Scans from books, magazines or virtually any source!

Or, combine it with CAT Reader OCR and scan text into your DTP or word processor.

### FEATURES:

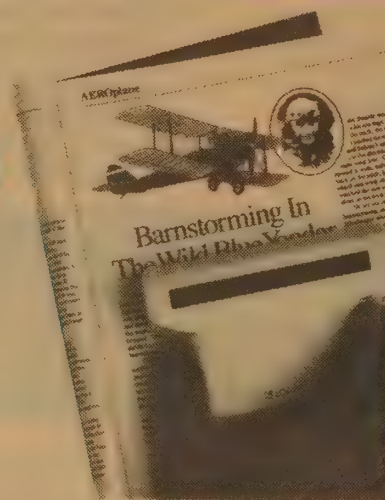
- Scans a full 4" x 11" graphic or text.
- Works with Finesse, PageMaker, Ventura, PC PaintBrush, WordPerfect 5.0 and many more...
- 1/2 card controller provided.

- PaintShow Plus offers an assortment of graphic's tools for refining and modifying your graphic images before printing.
- Utility to convert your image into all popular file formats is provided.
- Includes WinScan which allows you to scan, save and print images from Windows (version 2.03).

## LOGITECH 400 DPI SCANMAN & CAT READER OCR JUST \$199

Designed for hand-held scanners (perfect with the ScanMan), CAT Reader works through libraries of font and point sizes. Libraries of the most popular fonts and point sizes are provided. You can train it to read new ones as well.

- Automatically joins 2 scans of 8 1/2" x 11" page.
- Outputs in WordPerfect, WordStar, Microsoft Word and ASCII formats.



## LOGITECH FINESSE DESKTOP PUBLISHING ROCK BOTTOM \$69.95 NEW Version 3.1

### HERE ARE JUST A FEW FINESSE FEATURES:

- Excellent scanner support including hand-held (ScanMan).
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## New Products

### PORTABLES

#### TWINHEAD SUPERLAP 386SX

The SuperLap 386SX is the latest entry by Twinhead Corp. for the North American market. Built-in features include



VGA graphics displayed on a 10" Supertwist sidelit LCD screen; high performance interleaved and paged main memory with a 16-bit data path; a parallel port and two asynchronous serial ports. The standard system also includes a 1.44Mb floppy disk drive, a 40Mb embedded-controller low-power hard disk drive, and a detachable keyboard. The SuperLap 386SX is shipped with a factory installed 2400 bps, Hayes-compatible modem. Network interface cards, a special video graphics processor card for presentations, or a dedicated fax modem card can be added for greater flexibility. (\$2995) Twinhead Corp., 1537 Centre Pointe Dr., Milpitas, CA 95035. (408)945-0808.

#### LIGHT NOTEBOOK FROM TANDY

The new Tandy 1500 HD notebook computer is surprisingly light—weighing under 6 lbs., including battery and standard floppy and hard drives. It has a NEC V-20 micro-

*continued*

### PRODUCT UPDATES

- **Access Softek** and **Brøderbund Software** have released **Dragnet 2.1**. This fast non-indexing text-retrieval program is also the only available text-retrieval program for Windows 3.0. Contact: Access Softek, Inc., 3204 Adeline St., Berkeley, CA 94703. (415)654-0116.
- **ACIUS, Inc.** has announced **version 2.1 of 4th Dimension**. The free upgrade will be sent to all registered users. V2.1 features improved memory management, allowing it to run under MultiFinder with as little as 512K of memory. Contact: ACIUS, Inc., 10351 Bubb Rd., Cupertino, CA 95014. (408)252-4444.
- **Boca Research, Inc.**, manufacturer of add-on boards, is initiating a comprehensive **24-hour bulletin board service** dedicated to the support of its IBM PC memory, video, and multi-function board-level products. The BBS is designed to supply Boca's customers with technical support services and software upgrades. Contact: Boca Research, Inc., 6401 Congress Ave., Boca Raton, FL 33487. (407)997-6227, BBS (407)241-1601.
- **Charles Schwab and Co.** has released **The Equalizer 2.3**, an upgrade to its personal investment package for IBM-PC and compatible computers. The new version includes faster transmission speed, a new installation program and system diagnostics in addition to the primary features of online trading, quotes, research, portfolio management and account information. Contact: Charles Schwab and Co. Inc., The Schwab Bldg., 101 Montgomery St., San Francisco, CA 94104. (415)627-7000.
- **Clariscorp.** released **Clariscorp CAD 2.0**, the new version of its professional design and drafting software for the Macintosh. CAD 1.0 owners can purchase an upgrade for \$79, Clariscorp MacDraw II owners can purchase CAD 2.0 for \$499. Contact: Clariscorp, 5201 Patrick Henry Dr., Santa Clara, CA 95052-8168. (408)987-7000
- **Digital Vision** is offering a free upgrade to all **Computer Eyes/Pro** board owners. Version 1.1 provides greater compatibility among multiscreen displays and an improved Paused VCR option to provide higher quality images with more VCRs. Contact: Digital Vision, Inc., 270 Bridge St., Dedham, MA 02026. (617)329-5400.
- **Folio** and **Novell** have joined to upgrade the **NetWare Help** utility to an enhanced version of Folio's infobase management software. Novell will include Folio PreVIEW v2.0 with each copy of its NetWare networking system to give users access to technical product information. Upgrades from NetWare Help to NetWare Help II are available for \$75. Contact: Folio Corp., 2155 N. Freedom Bldg., Suite 150, Provo, UT 84604. 1-800-543-6546.
- **Lotus Development Corp.** has introduced **Symphony 2.2**. This new version is available in standard, server and node editions. Contact: Lotus Development Corp., 55 Cambridge Pkwy., Cambridge, MA 02142. (617)577-8500.

*continued*



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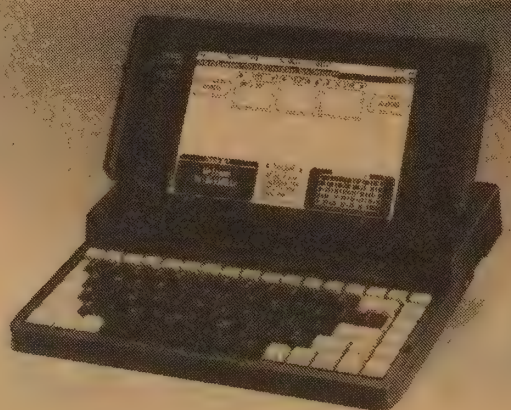
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## PRODUCT SPOTLIGHT



processor and a clock speed of 10MHz. The 64K of memory, expandable to 1.64Mb, provides the power and memory to run most business and personal software. A LIM 4.0 expanded memory driver is also supplied to configure additional memory. Standard features include one 3.5" floppy drive, an internal 20Mb hard drive, MS-DOS 3.3, and Tandy's DeskMate personal productivity software. The 1500 HD has a high-definition, blue-on-white LCD display with 640 x 200 CGA color resolution. (\$1999; an optional 1Mb memory upgrade is \$399.95; a 2400 bps internal modem is \$199.95) Tandy Corp., 1800 One Tandy Center, Fort Worth, TX 76102. (817)390-3487.

## PRODUCT UPDATES

*Continued*

► **Lotus Development Corp.** has announced an **In-Store Upgrade Program**. Under this program users simply turn in the original title page of their 1-2-3 reference manual to upgrade to either 1-2-3 Release 2.2 or Release 3.1. Users may upgrade through participating stores or directly through Lotus. Contact: Lotus Development Corp., 1-800-TRADE-UP.

► **Que Software** has introduced **RightWriter 4.0**. This new version adds several new features, including key access to six best-selling word processing programs. A free copy of Strunk & White's *The Elements of Style* is included in each new version package. Users can upgrade for \$25. Que Software, Inc., 11711 N. College Ave., Carmel, IN 46032. (317)573-2500.

► **ARC+Plus v7.0** from **System Enhancement Assoc.** offers data compression, pull-down menus, unlimited backup options and Archive Management with password protection. Users of any version of ARC can upgrade for \$24.95 by sending the title page of the manual. Contact: System Enhancement Assoc., Inc., 925 Clifton Ave., Clifton, NJ 07013. (201)473-5153.

► **The Santa Cruz Operation** has released the **Open Desktop Server Upgrade**, a supplemental upgrade to Open Desktop, a complete graphical operating system for 386 and 486-based PCs. The Open Desktop Server Upgrade adds server capabilities to Open Desktop for PC-Interface and networked SQL databases, and includes a multiuser license for all of Open Desktop's system services. Contact: The Santa Cruz Operation, Inc. (SCO), 400 Encinal St., PO Box 1900, Santa Cruz, CA 95061. (408)425-7222.

► **United Software Security** has released **PC Librarian 2.0**, an archive management software package for the MS-DOS, Novell NetWare and compatible environment. PC Librarian removes and archives inactive PC files while retaining on the hard disk a descriptive catalog of the archived files along with their location. Contact: United Software Security, Inc., 8133 Leesburg Pike, Vienna, VA 22180. (703)556-0007.

### PERFORMANCE IN A NOTE

The Maxar Notebook PC is a 7 lb., 286-based 12MHz Notebook PC from Hyosung Computer & Information Systems (HCI). Standard features include a back-lit 640 x 480



VGA display, one 3.5" 1.44Mb floppy drive, a 20Mb hard disk drive, a 2400 bps modem, 1Mb RAM, and a full travel 75-key keyboard. Removable NiCad C cell batteries provide up to 3 1/2 hrs. of continuous use. Standard alkaline C cell batteries can be used as an alternative power source, as well as an AC adaptor. A custom designed MaxCache resides in ROM to minimize the frequency of hard disk read/write operations. HCI includes DOS 4.01, Quattro Pro and other popular software programs. (\$3695) Hyosung Computer & Information Systems, Inc., 710 Lakeway, Suite 285, Sunnyvale, CA 94086. (408)733-0810.

### POWERFUL NEW AUSTIN NOTEBOOK

Austin Computer Systems has entered the notebook computer market with its 386/SX-20 that comes standard with 2Mb RAM, a 20Mb hard disk drive, one 3.5" 1.44Mb floppy drive, two serial ports and one parallel port, and a 10" VGA display. Weighing only 6 lbs., it is pre-loaded with MS-DOS 4.1 and features an 82-key keyboard with embedded numeric keypad and twelve function keys.

*continued*



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## MOTHERBOARDS

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| 386-33 MHz 64K Cache (w/o cpu) | \$475 |
| 386-25 MHz 64K Cache (w/o cpu) | \$399 |
| 386-25 MHz (w/o cpu)           | \$295 |
| 386-16SX MHz                   | \$335 |
| 286-20 MHz                     | \$279 |
| 286-16 MHz                     | \$199 |
| 286-12 MHz                     | \$135 |

## HARD DRIVES

|                      |        |
|----------------------|--------|
| ST 225 (20 MB)       | \$179  |
| ST 238R (30 MB)      | \$199  |
| ST 251-1 (40 MB)     | \$269  |
| ST 4096 (80 MB)      | \$569  |
| NEC 60 MB (RL)       | \$320  |
| NEC 150 MB (ESDI)    | \$799  |
| Conner 80 MB         | \$509  |
| Conner 100 MB        | \$559  |
| Conner 200 MB        | \$895  |
| Maxtor 150 MB (ESDI) | \$945  |
| Maxtor 320 MB (ESDI) | \$1395 |
| Maxtor 320 MB (SCSI) | \$1395 |

## ADD-ON CARDS

|                              |       |
|------------------------------|-------|
| Mono/Printer Card            | \$30  |
| EGA 800x600                  | \$75  |
| VGA 16 Bit 800x600           | \$85  |
| Paradise VGA 16 Bit 1024x768 | \$110 |
| Trident VGA 16 Bit 1024x768  | \$110 |
| AT 1:1 H/FDC MFM             | \$69  |
| AT I/O 25, 1P, 1G            | \$29  |
| DTC 7280 1:1 F/HDC           | \$89  |
| DTC 7287 1:1 F/HDC (RL)      | \$98  |
| DTC 6280 ESDI                | \$140 |

## FLOPPY DRIVES

|                |         |
|----------------|---------|
| Teac 360K/1.2  | \$63/69 |
| Teac 720K/1.44 | \$62/69 |
| Fuji 360/1.2   | \$58/68 |

## MONITORS

|                        |           |
|------------------------|-----------|
| Hyundai                | \$70      |
| Relisys EGA            | \$320     |
| Relisys VGA (1024x768) | \$350     |
| NEC MultiSync 2D/3D    | \$669/619 |

## MISC/MEMORY

|                 |        |
|-----------------|--------|
| 41256-80        | \$195  |
| 44256-80        | \$850  |
| 256x9-80        | \$1750 |
| 1Mx1-80         | \$750  |
| 1Mx9-80         | \$67   |
| 4Mx9-80         | \$350  |
| Keytronic (101) | \$47   |
| 101 Key         | \$38   |
| 2400B Modem     | \$75   |
| Optical Mouse   | \$65   |

## PANASONIC PRINTERS

|          |       |
|----------|-------|
| KX-P1180 | \$161 |
| KX-P1124 | \$285 |
| KX-P4420 | \$899 |

**\$2999**

**486-25 MHz 64K CACHE**

LANDMARK = 115

- ☐ 1 MB Ram Expandable to 8 MB
- ☐ AMI BIOS
- ☐ 2X32 Bit, 5X16 Bit, 1X8 Bit Slots
- ☐ Real Time Clock w/Battery Backup
- ☐ 1.2 MB Floppy Drive
- ☐ 1:1 2 FD/2 HD Controller
- ☐ 2 Serial, 1 Parallel, 1 Game Port
- ☐ 230W PS w/Case Holds 5 Drives
- ☐ 101 Enhanced Keyboard

**\$1199**

**386-33 MHz 64K CACHE**

LANDMARK = 56

- ☐ 1 MB Ram Expandable to 8 MB
- ☐ Socket 80387 & AMI BIOS
- ☐ 2X32 Bit, 5X16 Bit, 1X8 Bit Slots
- ☐ Real Time Clock w/Battery Backup
- ☐ 1.2 MB Floppy Drive
- ☐ 1:1 2 FD/2 HD Controller
- ☐ 2 Serial, 1 Parallel, 1 Game Port
- ☐ 230W PS w/Case Holds 5 Drives
- ☐ 101 Enhanced Keyboard

**\$969**

**386-25 MHz 64K CACHE**

LANDMARK = 43

- ☐ 1 MB Ram Expandable to 8 MB
- ☐ Socket 80387 & AMI BIOS
- ☐ 1X32 Bit, 5X16 Bit, 2X8 Bit Slots
- ☐ Real Time Clock w/Battery Backup
- ☐ 1.2 MB Floppy Drive
- ☐ 1:1 2 FD/HD Controller
- ☐ 230W PS w/Case Holds 5 Drives
- ☐ 101 Enhanced Keyboard

**\$849**

**386-25 MHz**

LANDMARK = 33

- ☐ 1 MB Ram Expandable to 8 MB
- ☐ Socket 80387 & AMI BIOS
- ☐ 1X32 Bit, 5X16 Bit, 2X8 Bit Slots
- ☐ Real Time Clock w/Battery Backup
- ☐ 1.2 MB Floppy Drive
- ☐ 1:1 2 FD/2 HD Controller
- ☐ 2 Serial, 2 Parallel, 1 Game Port
- ☐ 200W PS w/Case Holds 5 Drives
- ☐ 101 Enhanced Keyboard

**\$599**

**386SX-16 MHz**

LANDMARK = 21

- ☐ 1 MB Ram Expandable to 4 MB
- ☐ Socket 80387 & AMI BIOS
- ☐ 6X16 Bit, 2X8 Bit Slots
- ☐ Real Time Clock w/Battery Backup
- ☐ 1.2 MB Floppy Drive
- ☐ 2 FD/HD Controller
- ☐ Serial, Parallel, Game Port
- ☐ 200W PS w/Case Holds 5 Drives
- ☐ 101 Enhanced Keyboard

**\$536**

**286-20 MHz**

LANDMARK = 26.5

- ☐ 512K Ram Expandable to 4 MB
- ☐ Socket 80287 & AMI BIOS
- ☐ 6X16 Bit, 2X8 Bit Slots
- ☐ Real Time Clock w/Battery Backup
- ☐ 1.2 MB Floppy Drive
- ☐ 2 FD/HD Controller
- ☐ 200W PS w/Case Holds 5 Drives
- ☐ 101 Enhanced Keyboard

**\$459**

**286-16 MHz**

LANDMARK = 21

- ☐ 512K Ram Expandable to 4 MB
- ☐ Socket 80287 & AMI BIOS
- ☐ 6X16 Bit, 2X8 Bit Slots
- ☐ Real Time Clock w/Battery Backup
- ☐ 1.2 MB Floppy Drive
- ☐ 2 FD/HD Controller
- ☐ 200W PS w/Case Holds 5 Drives
- ☐ 101 Enhanced Keyboard

**\$369**

**286-12 MHz**

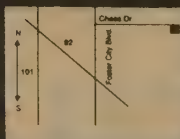
LANDMARK = 16

- ☐ 512K Ram Expandable to 4 MB
- ☐ Socket 80287 & AMI BIOS
- ☐ 6X16 Bit, 2X8 Bit Slots
- ☐ Real Time Clock w/Battery Backup
- ☐ 1.2 MB Floppy Drive
- ☐ 2 FD/HD Controller
- ☐ 200W PS w/Case Holds 5 Drives
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- 300 dpi resolution
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| GENOA 6300 SUPER VGA .....            | 125 |
| GENOA 6400 SUPER VGA .....            | 155 |
| JOVIAN REALTIME IMAGE CAP .....       | 559 |
| JOVIAN VGA TO NTSC OUTPUT .....       | 399 |
| PARADISE VGA 1024 CARD .....          | 205 |
| USVIDEO VGA/NTSC RECORDABLE .....     | 699 |
| USVIDEO GENLOCK OVERLAY MOD .....     | 329 |
| VIDEO 7 VRAM VGA 512K .....           | 395 |
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| IDE HOST ADAPTER .....            | 29      |
| WD-GEN2/WD-27X .....              | 55/65   |
| WD-1007V-SE2 ESDI 1:1 .....       | 215     |
| WD-1006V-MM1/WD1006-MM2 .....     | 110/115 |
| WD-1006-SR1/WD 1006V-SR2 .....    | 125/135 |
| ADAPTEC ACB 2372C RLL, 1:1 .....  | 135     |
| ADAPTEC AHA 1542B SCSI 1:1 .....  | 295     |
| ADAPTEC ACB 2322D ESDI, 1:1 ..... | 209     |
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| LANtastic 2M bps Adapter .....     | 205   |
| LANtastic Hub .....                | 385   |
| Hub Installation Kit .....         | 168   |
| LANtastic Network Eye .....        | 205   |
| LANtastic Harmonica .....          | 23    |
| LANtastic Ethernet Starter .....   | 545   |

### PRINTERS

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|---------------------------------------------|---------|
| Fujitsu DL 1100 240 cps .....               | 339     |
| NEC P2200XE .....                           | 369     |
| NEC P6200/P6300 .....                       | 499/679 |
| PANASONIC KX-P1124 .....                    | 288     |
| PANASONIC KX-P1180 .....                    | 165     |
| PANASONIC KX-P1191 .....                    | 225     |
| PANASONIC KX-P1695 .....                    | 395     |
| PANASONIC KX-P1624 .....                    | 355     |
| PANASONIC KX-P4420 LASER .....              | 795     |
| PANASONIC KX-P4450 LASER .....              | 1399    |
| PANASONIC KX-P4455 LASER (POSTSCRIPT) ..... | 2275    |
| STAR XB-2415, 240cps .....                  | 635     |
| STAR XB-2410, 200cps .....                  | 475     |
| STAR XR-1500, 300cps .....                  | 475     |
| STAR XR-1000, 300cps .....                  | 345     |
| CANON LASER BEAM LBP-4 .....                | 965     |
| CANON LASER BEAM LBP-8 .....                | 1599    |
| CANON BJ-130e .....                         | 675     |
| CANON BJ-10e .....                          | 329     |
| CITIZEN GSX 140 192 cps .....               | 295     |
| CITIZEN 200 GX 240 cps .....                | 188     |

### WINDOWS

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| MS WINDOWS 3.0 .....               | 89  |
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| MS PROJECT FOR WINDOWS .....       | 479 |
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| MS WINDOWS WORD .....              | 329 |
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| NOVELL ELS LEVEL I .....  | 549  |
| NOVELL ELS LEVEL II ..... | 1099 |
| NOVELL NETWORK 386 .....  | 5499 |
| NOVELL SET 2.15 .....     | 2899 |

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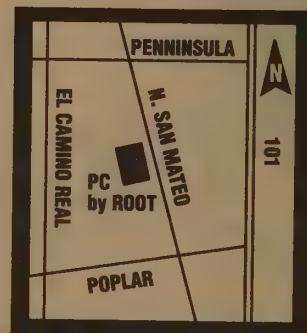
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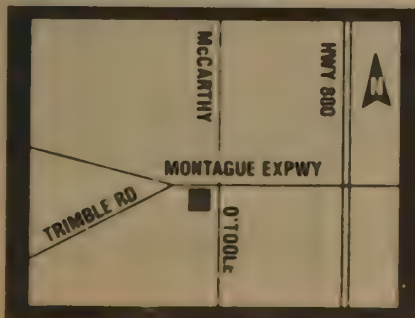
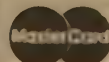
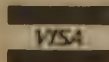
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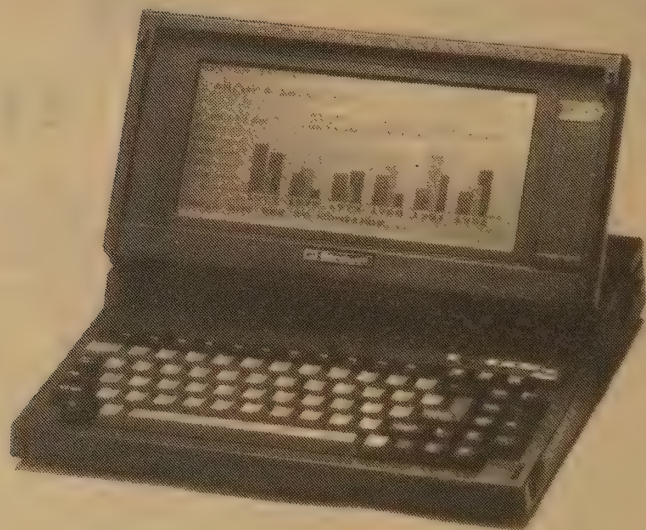




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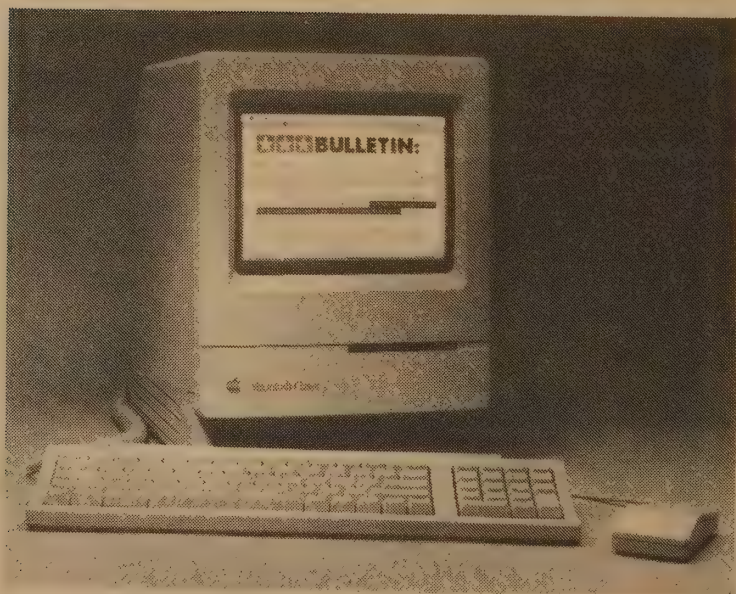
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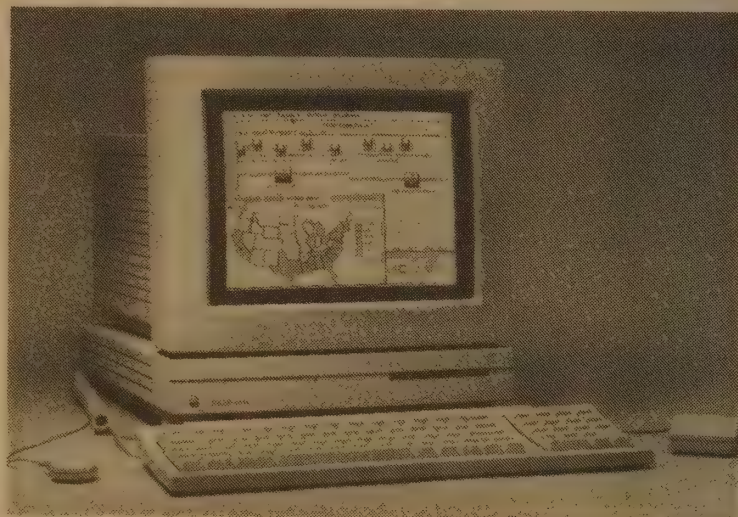
Classic includes an Apple SuperDrive (a 3.5" 1.44Mb floppy drive), the latest Macintosh System software, currently System 6.0.7, HyperCard 2.0 and a one-year warranty. The Classic 1 comes standard with 1Mb RAM and one SuperDrive floppy drive. The Classic 2 includes 2Mb RAM, one SuperDrive and an internal 40Mb hard disk drive. Both versions are ex-



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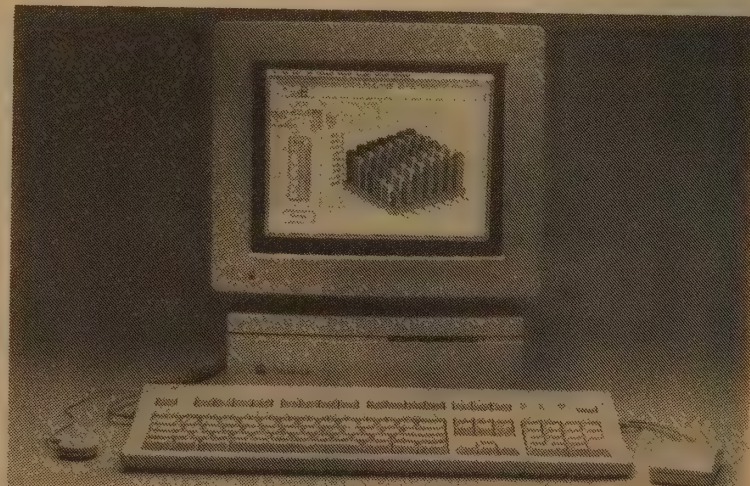
The Macintosh LC is a slim, 2" high design that offers a low-cost color system. The LC includes built-in support for three monitors and supports up to 256 colors, sound input, and optional Apple IIe software compatibility. The LC comes with a microphone that allows users to record and store their voice in much the same way hand-written notes are added to printed documents. Apple is offering an Apple IIe Card that will let schools and other customers with Apple IIes continue using most of the ten thousand software programs compatible



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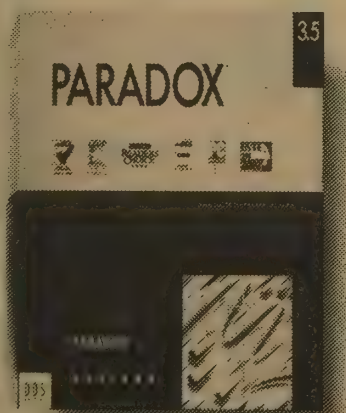
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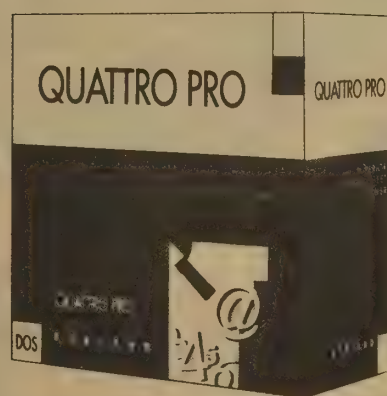


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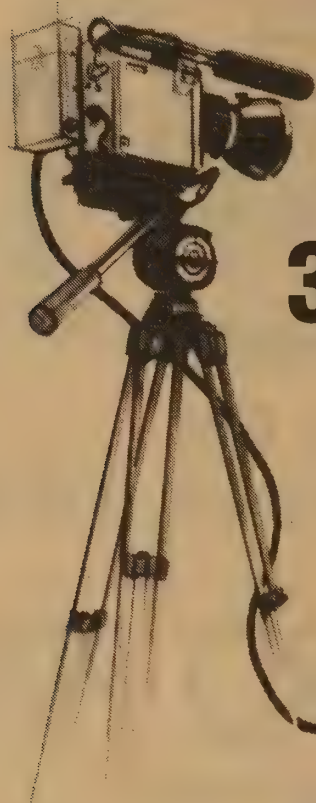


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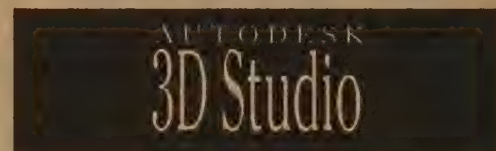
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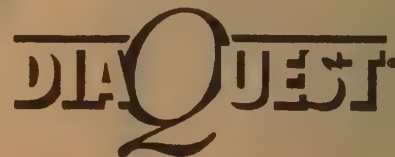
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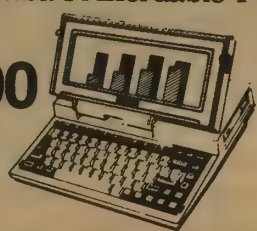
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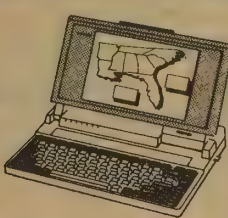
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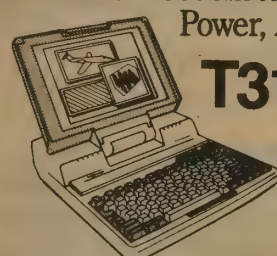
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## HARDWARE REVIEW

### WALKABOUT/SX LAPTOP COMPUTER

Manufactured By: Data General Corp.

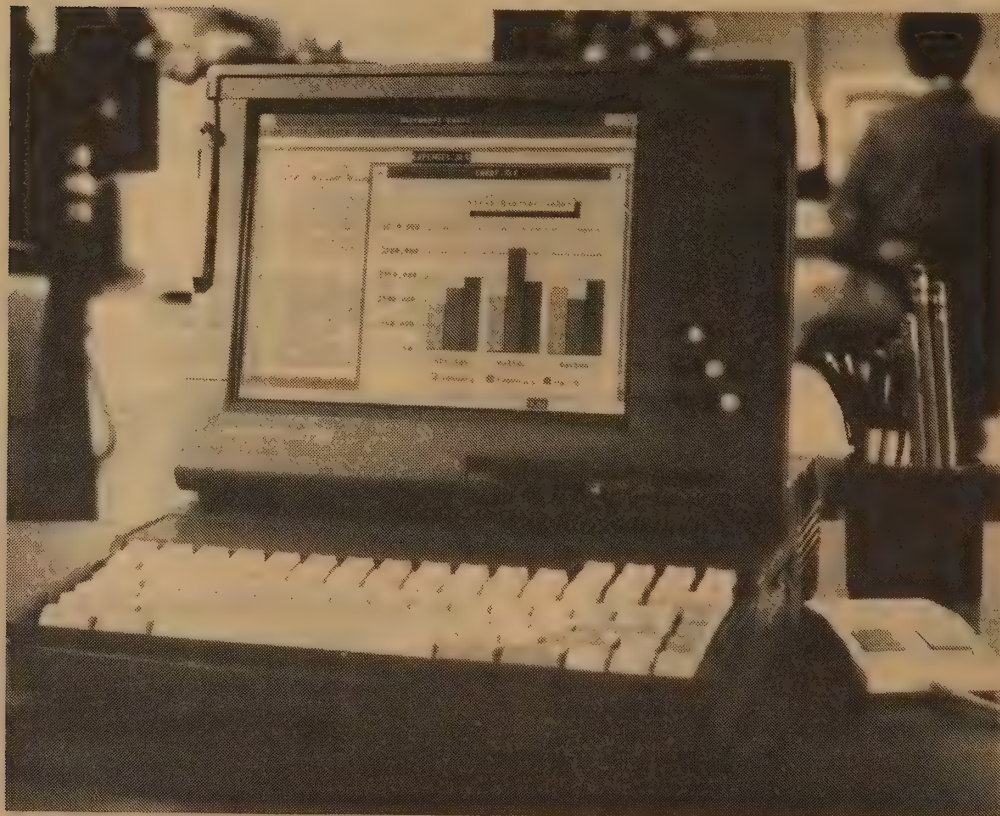
List Price: \$4,995

Reviewed By: Robert D. Athey, Jr.

Portable and laptop computers are the real workhorses for the traveling professional or the itinerant writer. I started my business eight years ago with a KayPro II that's been across the US a dozen times. Three years ago, the Zenith 181 I got was half the weight and a tenfold increase in capability over my older laptop. Many's the article I've completed for my German publisher as I was flying home from meetings. What possible upgrade could there be?

Data-General Corp., a mainframe computer giant, has been in the computer business for years. I recently got their Walkabout/SX and was surprised by this upgrade. This is an 80386-based machine with a 40Mb hard drive, 720K or 1.44Mb 3.5" floppy, and a pound or so lighter than the earlier laptop I had. It runs on an external NiCad battery module that smoothly plugs—making it seem like part of the case. The battery may be replaced with a 100-alkaline module for direct plug-in power, or that same module can be used to re-charge the battery, on or off the computer. The computer includes MS-DOS 4.0, along with seven disks of programs. The Walkabout/SX also has an internal 1200/2400 bps modem, and two 1Mb SIMM additions to memory. The modified AT-style keyboard comes with a separate attachable keypad.

The high-contrast backlit LCD visual display is only nominally black and white. It really looks more like a light beige and black in good low level light, but tilting the display can turn the black to blue, and strong sunlight turns up red hues. The display is VGA compatible, and the graphics are gorgeous. CIRRUS put together a graphics demo that starts with a San Francisco skyline that looks like a photo. They have devised a 32-shade grayscale to simulate the 256 colors, thus their demo shows a 16-shade scale pie chart with 13 discernable shades. On-screen controls let you do color reversal (white on black



or black on white). Other controls manipulate the shade from gray to black, and control the amount of backlighting.

This computer has turned out to quite useful in large and small data items, and gives extra speed to the slow strategy games I love so much. I've put the entire book I'm indexing on it, and have generated 3Mb of working files searching for indexable terms.

All is not sweetness and light, however. Sometimes the depressed key clicks and doesn't enter the letter. There are several chapter files I can't access or erase because the modem transfer did something strange to the names (highlighted letters?). Two public domain programs I dearly love (SD and Master Key) don't work on this machine, the latter because it doesn't recognize the hard disk format. The red light that shows when the battery is getting low must be heeded. When the battery gets too low the computer shuts down and you lose whatever was not saved to that point. You are warned by a persistent beep, and you'd best hook up the power cord or shut down.

The check on the specifics of the machine speeds and capabilities with the PC Magazine BENCHMARK series of programs are all positive. Indeed, the nominal 16MHz is a bit of an underestimate; the benchmarks ran closer to 18MHz. All in all, I'm quite impressed with the Walkabout, and expect to happily use it for years. (Data General Corp., 3400 Computer Dr., Westboro, MA 01580. 1-800-DATA-GEN)

## BOOK REVIEW

### COMPUTER VIRUSES, WORMS, DATA DIDLERS, KILLER PROGRAMS AND OTHER THREATS TO YOUR SYSTEMS

Written By: John McAfee and Colin Hayes

Published By: St. Martins Press

List Price: \$16.95

Reviewed By: Robert D. Athey, Jr.

A book that has a title that belongs in the Middle Ages, but I tend to think simplistically of these things. This paperback book deals thoroughly with the issue of viruses for PCs and Macs. It describes what viruses are, what they do, and techniques to protect yourself from the ill effects. The authors have the background to be believable. McAfee is president of a Silicon Valley company, and is chairperson of the Computer Virus Industry Association. Hayes is a writer publishing on fraud, forgery, technology and management. You can purchase this book separately, or receive it as a premium with the Virucide software package from Parsons Technology.

My interest in this book grew when all three of my MS-DOS computers were infected recently by a virus from an unknown source. The virus ate RAM as time passed, so suddenly I couldn't use WordStar 2000+ or Publish It. Over a period of months I worked to get everything clean, re-low-level formatted, and installed several virus warning/protection programs.

The book, with thirteen chapters and three appendices, gives a thorough description of the steps needed to detect, disinfect and protect data, programs and disks. The book even gives program listings of some viruses (bad idea!?) and some projected threats by viruses on the horizon. The authors also review several anti-viral programs. (I was surprised to see their story that someone infected the public domain FLU\_SHOT program, in one of its iterations. It is a program that I reviewed. ARG!)

This well-written book is divided so you can skip the super-techy

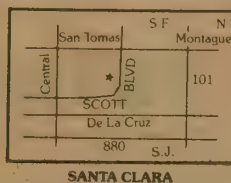
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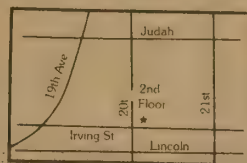
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| XT Turbo                        | 49  |

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| Toshiba T134FA (42 MB)  | 385 |
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| WD 40 MB                | 270 |
| Conner (40 MB) IDE      | 354 |
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| Conner (100 MB) IDE     | 585 |

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| TEAC 1.44MB FD              | 75  |
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|------------------------|-----|
| MONO                   | 72  |
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| VGA CARD-16 BIT                     | 115 |
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| DTC 7287 FD/HD CONTROLLER (1:1 RLL) | 135 |
| DTC 7280 FD/HD CONTROLLER (1:1)     | 115 |
| IDE Dual Controller                 | 25  |
| DTC-3280D (1:1, SCSI)               | 145 |
| DTC-6280D (1:1, ESDI)               | 145 |
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| AT Deluxe CASE      | 52  |
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| Panasonic 1624          | 395  |
| Panasonic 1124          | 285  |
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| Star NX 1000            | 165  |

### MISCELLANEOUS

|                         |         |
|-------------------------|---------|
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| 80287-8                 | 185     |
| 8087-1                  | 165     |
| 8087-2                  | 130     |
| DRAM                    | CALL    |
| 80387-16/20             | 315/325 |
| MOUSE (Logitech Serial) | 65      |
| MODEM 1200 (Int)        | 55      |
| MODEM 2400 (Int)        | 85      |
| MS DOS 4.01/3.3         | 70/65   |

Prices subject to change without notification



# PRODUCT SPOTLIGHT

stuff if you want to. The history of viruses is given, with its innocuous game-like beginning by the early students of programming. The history includes some of the more famous cases of infection, and how some got away even from their designers. The technical sections will be of interest to virus protection programmers, but will also be good reading for the computer generalist. This book should be in every public library, and the libraries of colleges, universities or companies with computers.

# SOFTWARE REVIEWS

## ULTRAPAINT V1.0

Manufactured By: Deneba Software, Inc.

For: IBM PC And Compatibles

List Price: \$199

Reviewed By: Matthew Leeds

UltraPaint is the smorgasbord of paint programs. It provides black and white painting,

8-bit color painting, grayscale image editing, and object drawing. A feature called Open Architecture allows the addition of new tools and functions.

The color paint capabilities blend fills, multi-color airbrush, masking, customizable color palettes, color gradients, and a color picker. All paint modes include rotation by one degree increments, additive and subtractive lasso, marquee and magic wand selection tools, editable brushes, auto tracing, and transfer modes.

The grayscale editing offers contrast and brightness controls, sharpen and blur effects, charcoal, water droplet, smear, and blend capabilities. The object drawing tools include freeform and Bezier curves, scaling 600 dpi precision, up to eight layers, and 256-color support.

Separate windows contain all of these features. Within each window there are miniature icons that represent each feature's function, with pop-up menus and dialog boxes that add additional control. While this modular approach lets you select only those sets to tools you wish to keep on-screen, it steepens the learning curve when first using UltraPaint.

The advantages of UltraPaint far outweigh its complications. Once you've worked with it, the multi-windowed approach becomes a background issue; and on a large screen monitor the problem of clutter disappears. The program will read most graphics file formats; Paint, PICT, PICT2, TIFF, Startup Screen, and MacDraw. Given both its price, and the wide range of features and functions, UltraPaint looks like a real winner for all but the most specialized graphics functions. (Deneba Software, Inc., 3305 N.W. 74th Ave., Miami, FL 33122. 305/594-6965.)

## STATPAK 4.12

Manufactured By: Northwest Analytical, Inc.

For: IBM And Compatibles

Reviewed By: Robert D. Athey, Jr.

After personal computers came into my life, having them as a tool to do statistics was never far from my mind. I am a devoted user of statistical data treatment programs. I recently came across an MS-DOS program that is better than my older collection of CP/M programs: STATPAK 4.12, from Northwest Analytical Inc. in Portland, OR.

The STATPAK program comes with a loose-leaf notebook of documentation three inches thick. Every command is well docu-

continued on page 149

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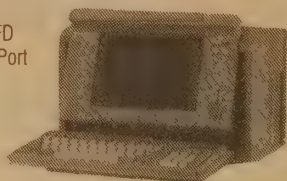
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| IDE 1:1 2 FD/2 HD controller        | ..... | 25     |
| Floppy controller card              | ..... | 39     |
| (for 1.4MB/1.2MB/720K/360K Floppy)  |       |        |
| Floppy controller for 360K only     | ..... | 19     |
| 1:1 Interleave 16 bit DTC           |       |        |
| RLL/MFM controller                  | ..... | 105/85 |
| HD/FD controller for 386/286 (1:1)  | ..... | 89/79  |
| Hard disk controller for 8088       | ..... | 49     |
| Mono/graphic/printer card           | ..... | 29     |
| Color graphic card                  | ..... | 40     |
| EGA Card Genoa                      | ..... | 65     |
| VGA Card, 16 Bit 800x600            | ..... | 69     |
| VGA Paradise 1024 OEM w/512K        | ..... | 115    |
| VGA Trident w/1 Meg                 | ..... | 159    |

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| Samsung amber 12" w/base   | ..... | 79    |
| VGA Monitor (14", .31 mm)  | ..... | 285   |

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| Logitech Trackman                | ..... | 79      |
| Logitech Serial Mouse (C9)       | ..... | 69      |
| Optical Mouse w/Dr. Halo         | ..... | 39      |
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| Panasonic 1180/1124 Printer      | ..... | 148/278 |
| Panasonic 4450 Laser             | ..... | 1295    |
| Modem 1200/2400                  | ..... | 55/76   |
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| 44MB/66MB (1/2Ht., 28ms)            | ..... | 299/329   |
| 30MB w/controller                   | ..... | 290       |
| 40MB 1" HT. .25ms                   | ..... | 275       |
| 120MB I.D.E. w/controller (18ms)    | ..... | 589       |
| 1.2MB/1.44MB floppy                 | ..... | 62/65     |
| 360K/720K floppy                    | ..... | 59/60     |
| 110MB/160MB ESDI                    | ..... | 619/639   |
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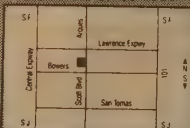
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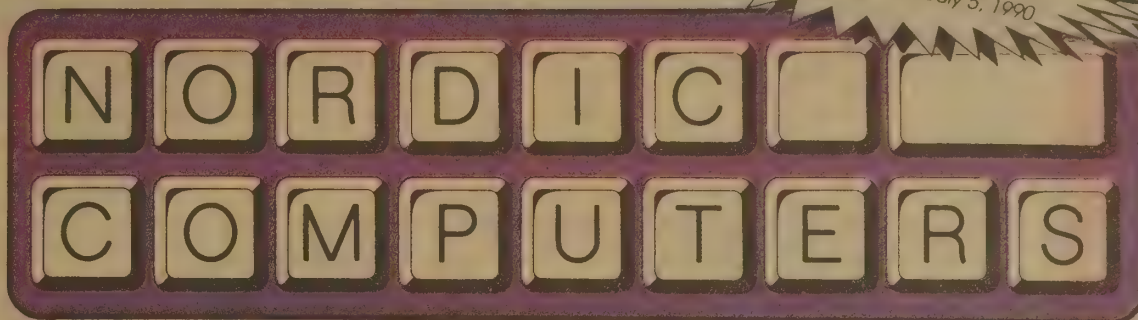






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 Clock/Calendar  
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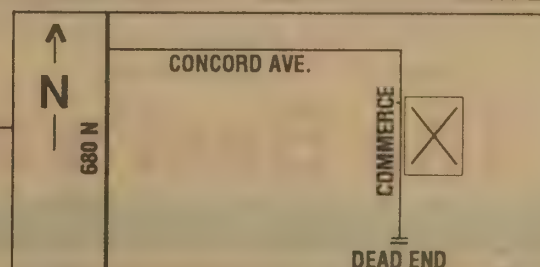
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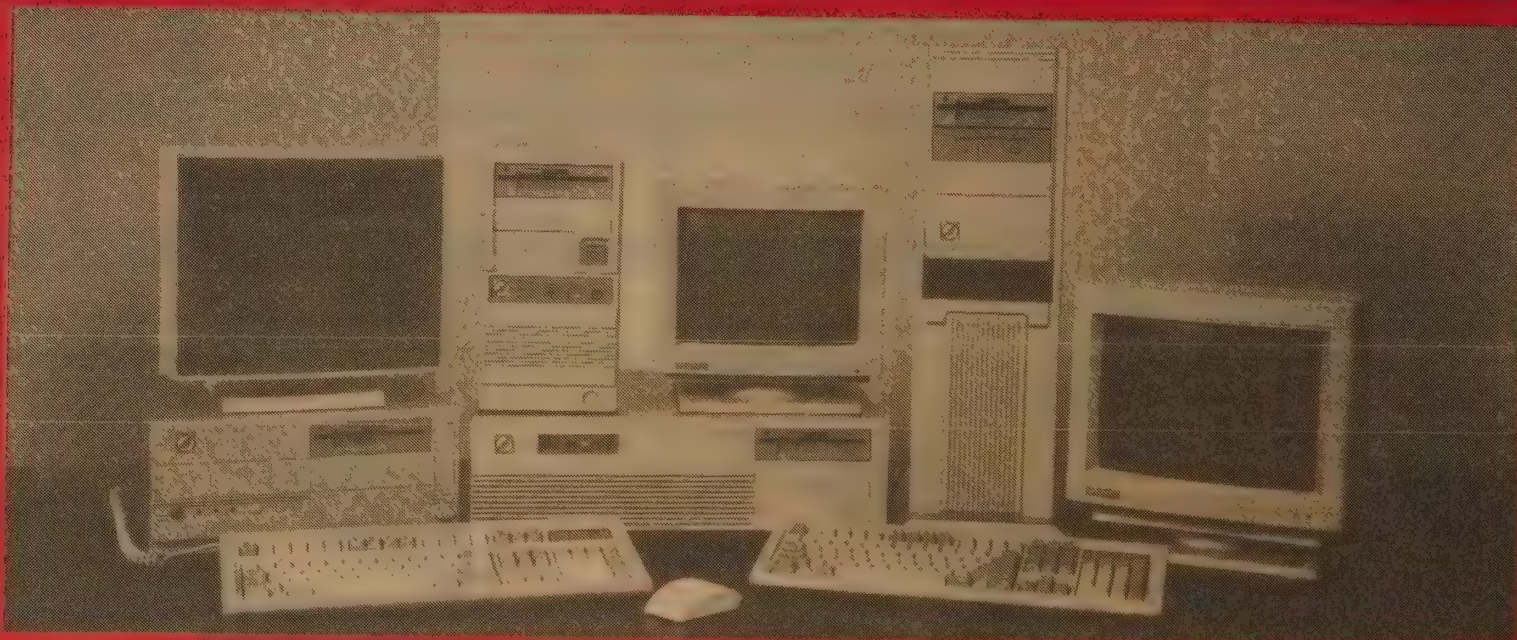
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- High resolution 14" **VGA** graphics monitor.

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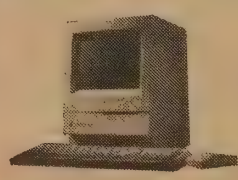
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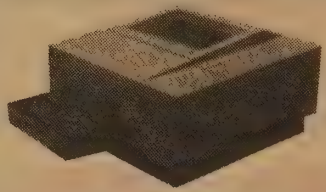
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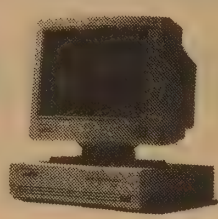
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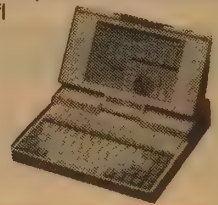
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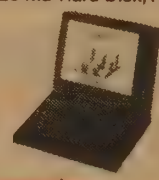
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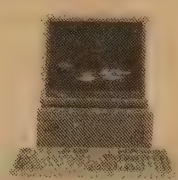
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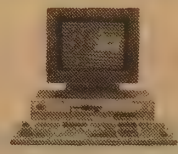
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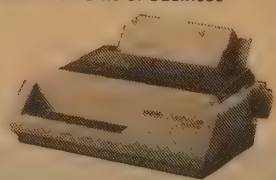
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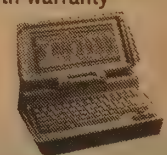
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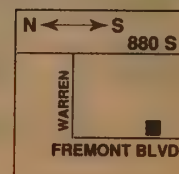
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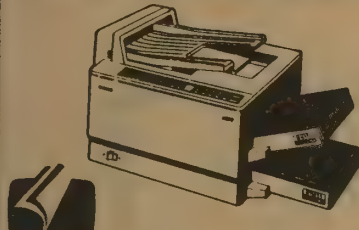
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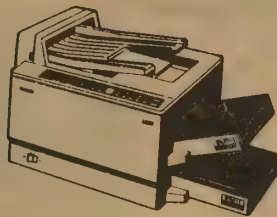
**KX-P4455** PostScript

**KX-P4450i**

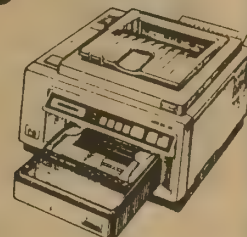
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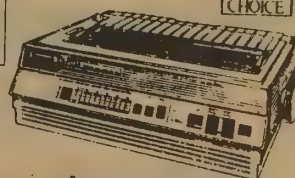
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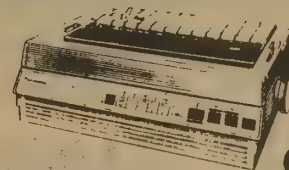
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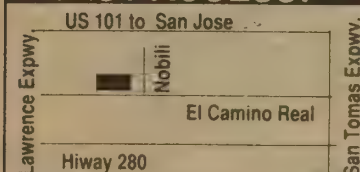
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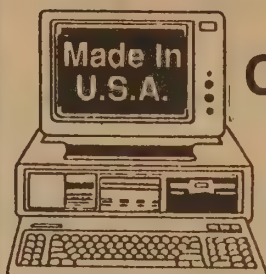
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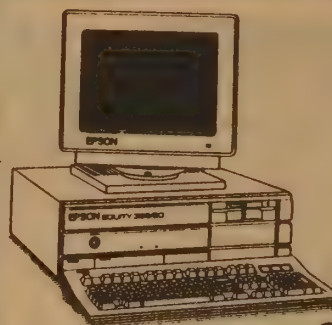
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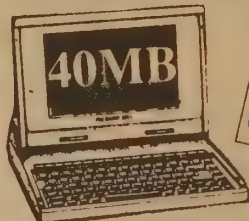
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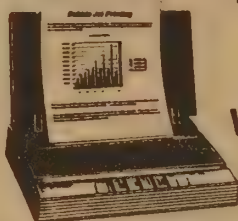
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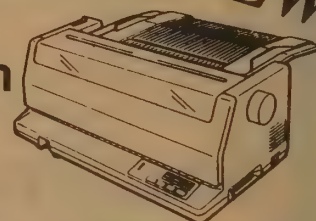
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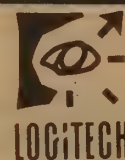
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| PANASONIC KX-P4450 laser printer          | \$ 999 |
| CANON LBP-8III laser printer              | 1099   |
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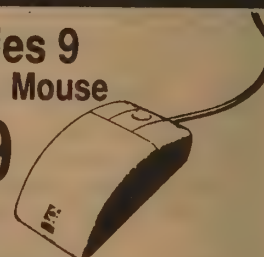
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| STAR NX2415 printer                     | 299    |
| TANDON 286-10 computer                  | 399    |
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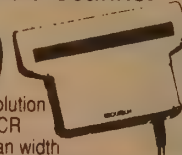


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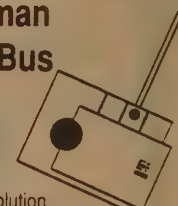
- 400 dpi resolution
- Supports OCR
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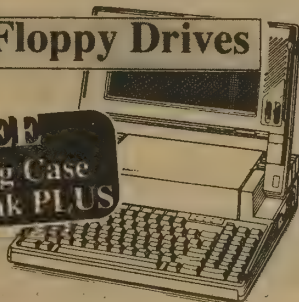
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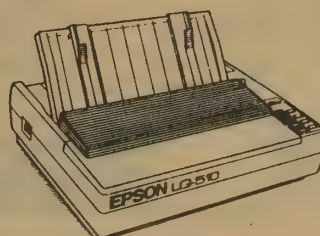
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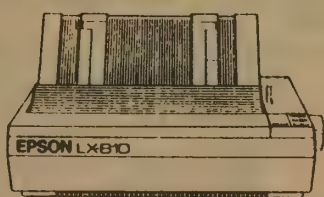


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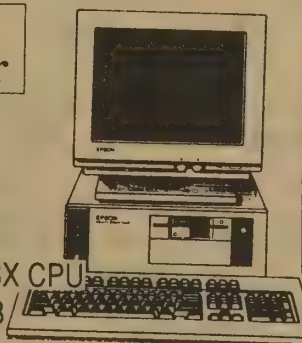


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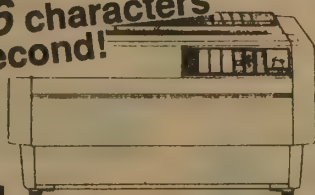
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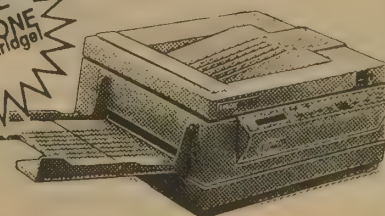
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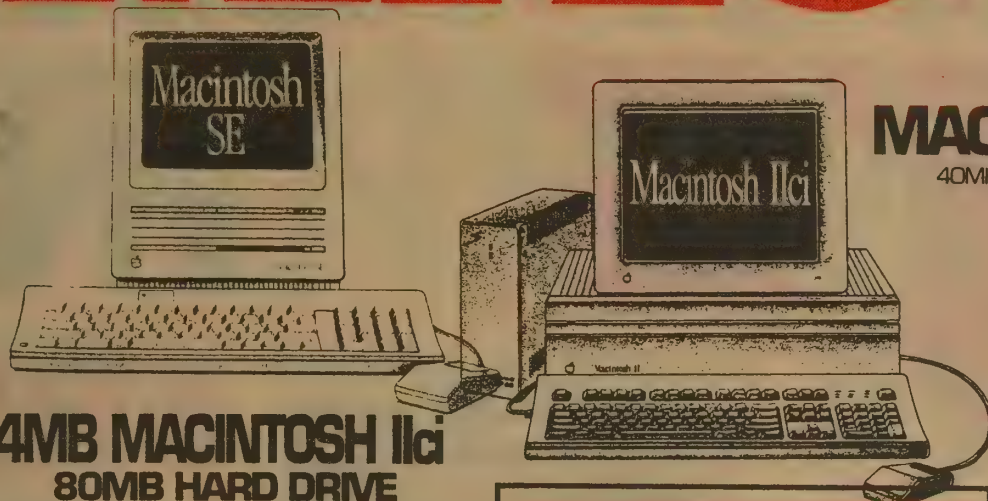
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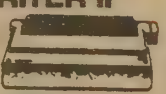
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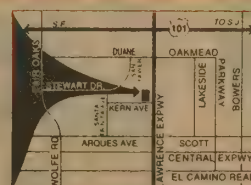
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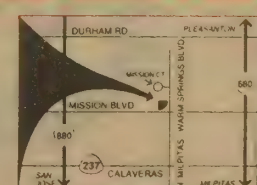
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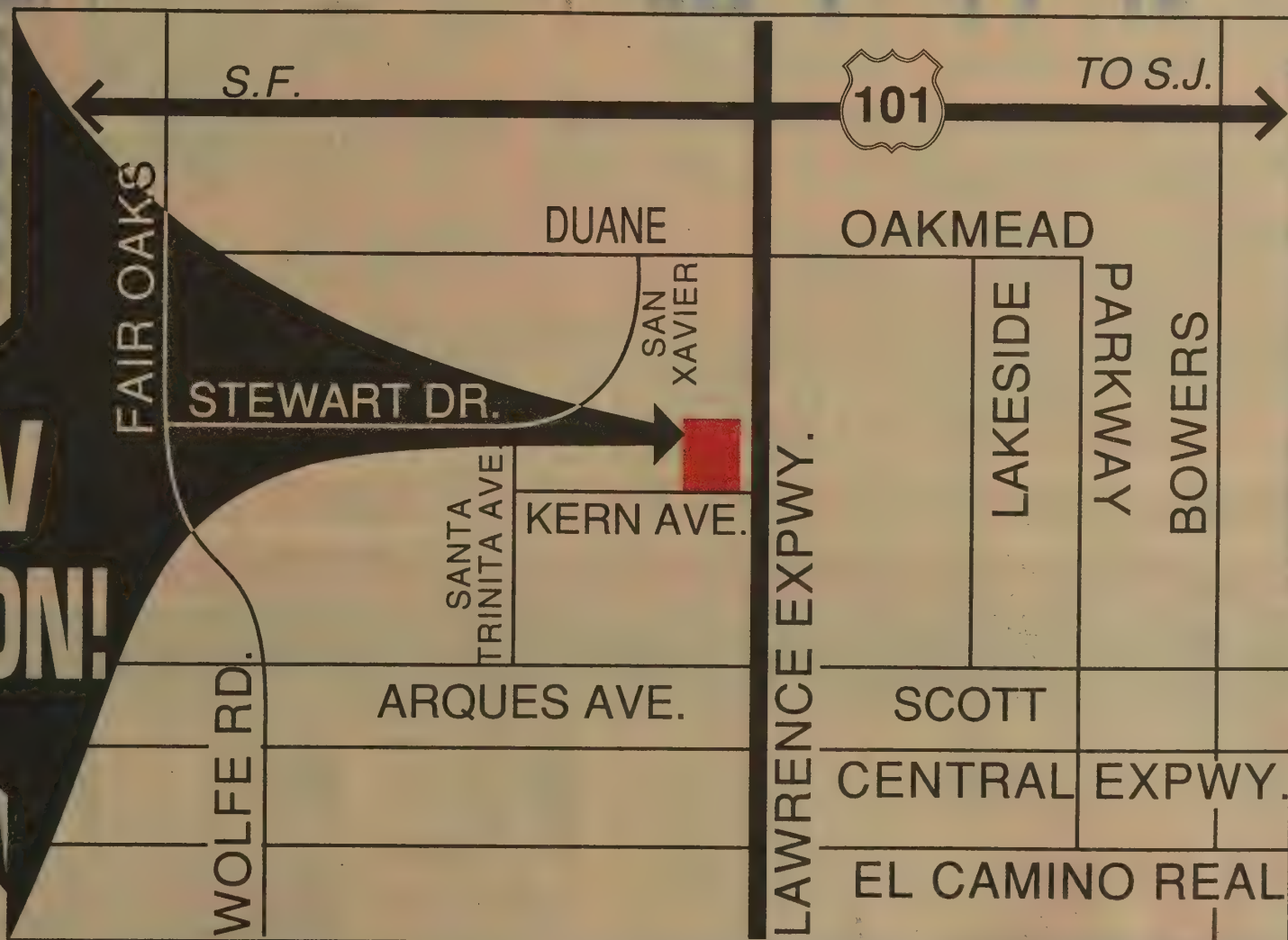
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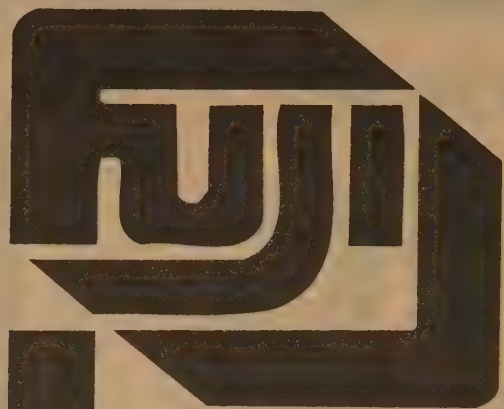
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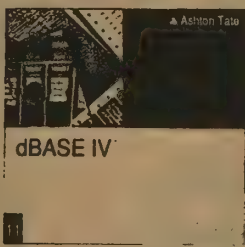
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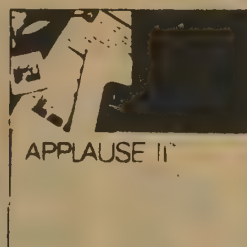
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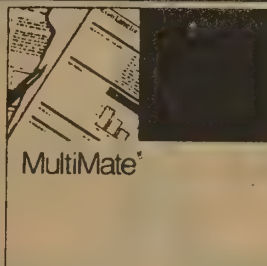


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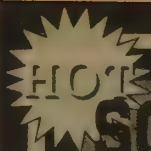
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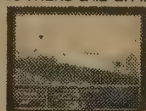
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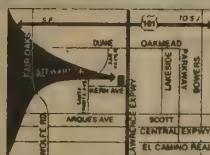
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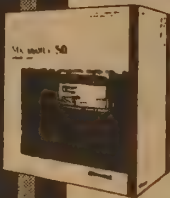
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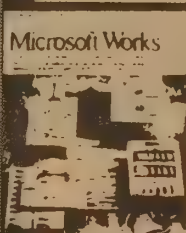


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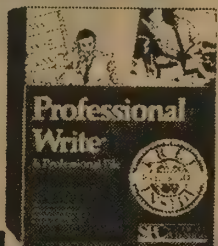
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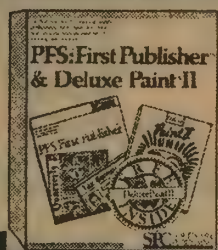


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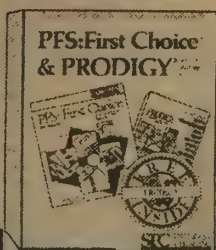


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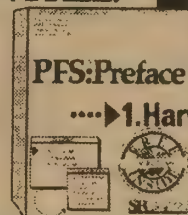
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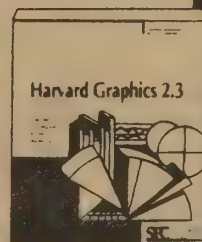
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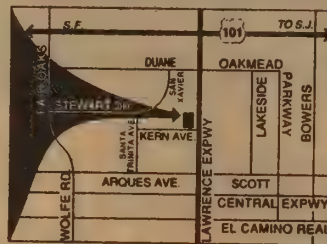
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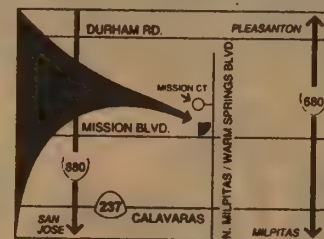
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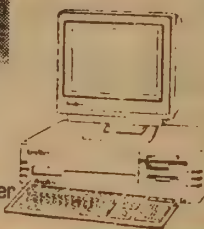
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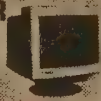
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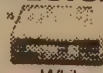


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Monographics Printer Card • 101 Keyboard

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GoldStar VGA Card and 3051 Display • 101 Keyboard

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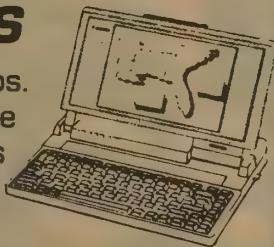
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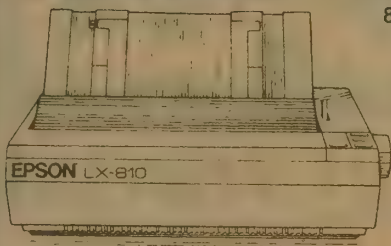
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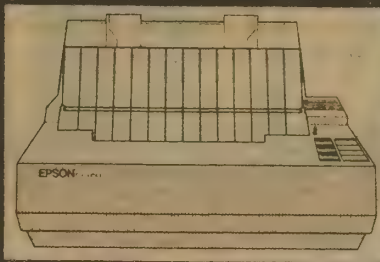


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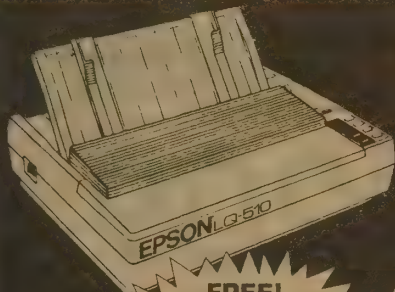
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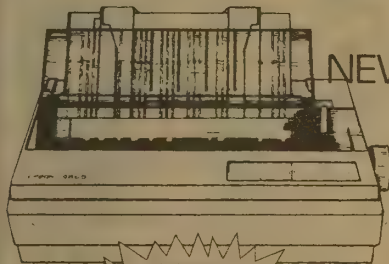


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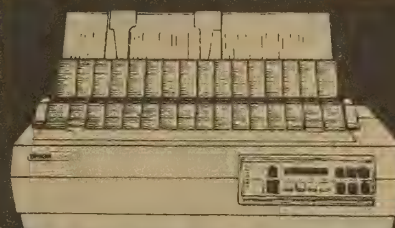
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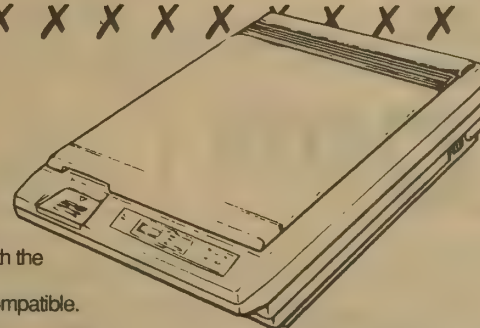
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function allows ES-300C to be connected directly to  
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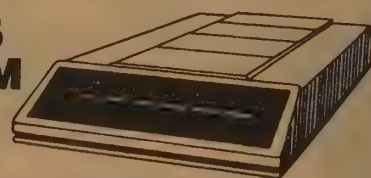
The intelligent, stand-alone modem with the stand-out price.

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Data Input Rates up to 9600 Baud!  
Hayes Compatible  
ProComm™ Software

PM 2400SA  
MNP LEVEL 5

**\$209**



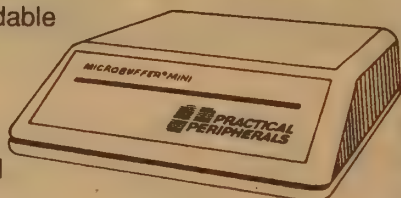
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Serial to Parallel or Parallel to Serial



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32K to 512K Parallel to Parallel **\$79<sup>95</sup>**

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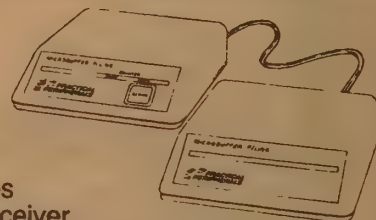


100% Hayes Compatible  
ProComm™ Software  
Error Free Transmission due to MNP Level 5  
PM2400SA MNP LEVEL 5

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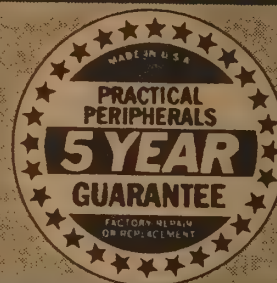
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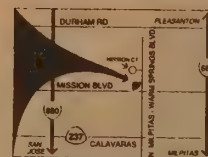
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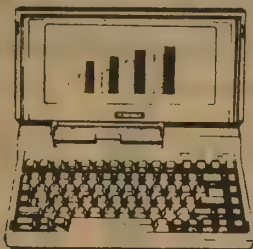
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Richly featured, yet weighs just 6.4 pounds • 512KB memory expandable to 1.2MB / 720KB 3.5" floppy drive / Reflective supertwist LCD display / MS-DOS 2.11 in ROM  
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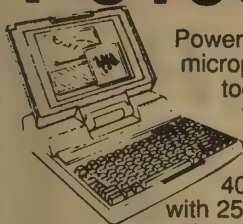
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12MHz 80C286 Processor  
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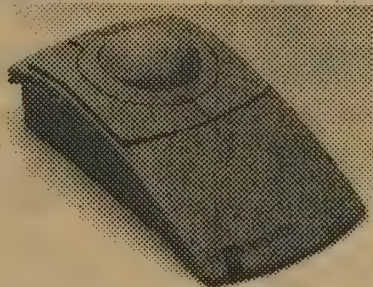
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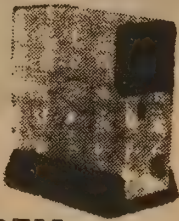


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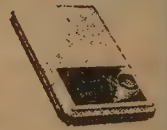


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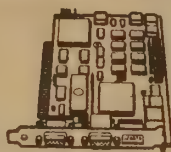
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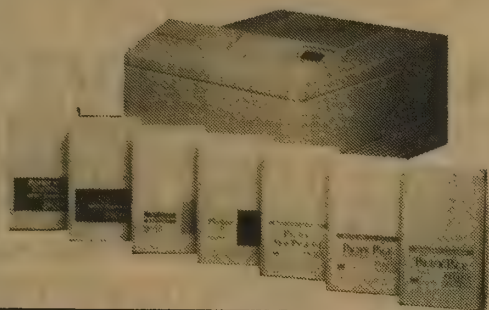
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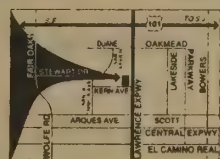
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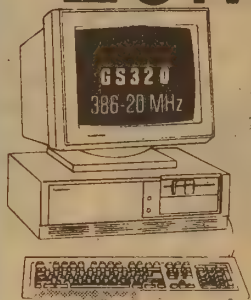
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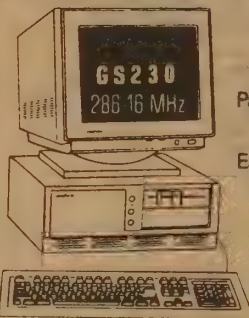
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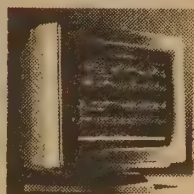
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12" TTL Amber  
Monochrome  
Non-Glare 720X350  
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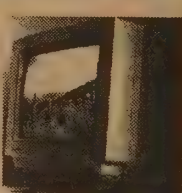
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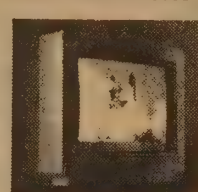
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Model 1460  
14" .28mm Non-Glare  
1024X768 / 800X600 / 640X480  
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Super VGA  
IBM 8514/A Compatible  
Tilt 'n' Swivel Base

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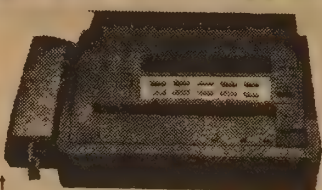


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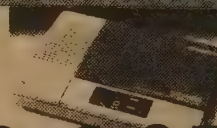


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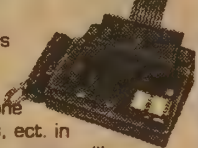
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mented. Still, this program is not for the statistical neophyte; there are presumptions that you know your way around these mathematical techniques and what they mean. For those who want a refresher, there is a substantial reference book list in an appendix. The STATPAK program consists of 2.5Mb on five 3.5" disks.

The Northwest Analytical people sell a variety of programs and items. They have devices that will connect your equipment (i.e., a balance) to a PC for data collection. They have a statistical process control program set that is separate from their STATPAK collection, as well. If you ask, they will send demo disks for you to try the programs.

To begin STATPAK simply type "SP" and the opening screen is a simple menu of four choices (Figure 1). The "I" option lets you install printer and screen controls, including modification of the highlighted function key codes shown at the bottom of every screen. They are easily modified to include subroutines frequently used.

Next, go to the "SP" menu to run the statistical analysis. Figure 2 shows the choices in this menu. The choices here bring up another menu having five to eight options within each topic. For instance, there are seven types for regression, and the MLINREG choice I used offers four styles of regression.

Remember, most linear regression models (including the one I

for example, we got from the above equation model didn't match the curves we'd plotted from the raw data. The raw data curves look like a hyperbola. We needed to convert the time (minutes) into an inverse. Using the editor program in this menu, I created a data conversion routine that used the old file to define a new file with the minutes column converted to inverse minutes (1/min.). Now the regressions gave us curves that really look like drying curves, albeit a bit displaced from the true data. (I suspect there's something missing from our model.) However, we were able to determine that the obvious control variables (time, temperature, film thickness) were statistically mandated. Some marginal variables (shaky "F" statistics) were important in some models. For instance, pigment (at lower than PVC) retards drying, as does porosity of substrate. At higher temperatures (100°C), the heat conductivity of the substrate becomes important. The real importance is that these details are able to be winnowed from a large complex experiment.

The graphics routines in these programs come in several forms. There is a low precision graphic subroutine, and all high resolution programs work that. The high resolution screen plot is gorgeous. The high resolution printer or plotter routines do well, too. Note that these graphics routines are all for two-dimensional plots only. I can think of data sets in which I'd like to see three-dimensional plots (i.e., Solubility Parameter determination on polymer by percent swell), and maybe we can get the NWA people to include this in the future.

An important point of usage of large specialized programs lies in the technical service you get. I'd had difficulty editing an output equation to feed the graphics programs, so I called to get help. It turns out these need a special editor (they include a formatted text editor for datafiles, and a non-document editor for equations), and I was using the wrong one. This non-document mode is really an ASCII editor (like EDLIN or the non-document mode of WordStar). The problem was instantly solved. Several other problems I had were solved by sending them a printout with specific questions. They either called immediately upon receipt, or replied through the mail. These people are serious about technical service; that has real benefits for the user. I'm quite happy with STATPAK, and you will be, too. (Northwest Analytical, Inc., 520 NW Davis St., Portland, OR 97209. 503/224-7727)

Figure 1

## STATPAK 4.12

Enter the desired routine name,

'U' for Utilities,  
'I' for Initialization,  
'M' for the Main Menu, or  
'S' to return to the operating System

Routine name, U(tilities), I(nitialization),  
M(enu), or S(ystem exit):

1 SP 2 SPEDIT 3 SPLICE 4 SELECT 5 QPLOT 6 DSTATS 7 MLINRE 8 GSCREE 9 GPRINT 10 PLOT

used) are simple linear models (remember  $y=mx+b$ ?). The model for this data set was  $Y=A+BX(1)+CX(2)+...$  with seven controlled variables. The styles of regression from STATPAK are:

- Regular—calculates based on all variables supplied;
- Forward—same as above, but will start with nothing but the intercept, and add variables to the model and recalculate stepwise until it finds one with the F statistic smaller than the limit you set;
- Backward—calculates as in Regular, but stepwise discards variables according to the F statistic limit you've chosen;
- Interactive—calculates all possible models, and gives you the listing of intercepts with a numbered listing of the controlled variables and their "F" statistics. You are asked to put in a number to add (or later subtract, if needed) to the model, and *boom*, it flashes onto the screen in a new tabulation.

These styles will feed data (actually an equation) to the graphics' routines to construct screen representation or printer/plotter output.

These programs also include many cute tricks. The straight lines,

Figure 2

## SPMENU - STATPAK Menu

A = Data Entry and File Utilities  
B = Conversion Utilities  
C = Mathematical Utilities  
D = Graphics and Plotting  
E = Probability# Calculations  
F = Single-Variable Statistics  
G = Distribution Functions  
H = Regression and Correlation  
I = Means Testing and Chi-square Analysis  
J = Non-Parametric Statistics  
K = Analysis of Variance

Q - Quit to SP (STATPAK entry program)  
S - System

Enter selection letter:

1 SP 2 SPEDIT 3 SPLICE 4 SELECT 5 QPLOT 6 DSTATS 7 MLINRE 8 GSCREE 9 GPRINT 10 PLOT

continued



## HANDOFF V1.2

Designed By: Fred Hollander

Published By: Software Innovations, Inc.

For: Macintosh

List Price: \$49.95

Reviewed By: Matthew Leeds

One of the great things about the Macintosh is its uncanny ability to shield the user from the operating system. Other systems require such shenanigans as setting the current directory, establishing a global path, or editing text inside icons to allow data files to find their parent applications. On the Macintosh, for example, you just click on a document and the application opens with the document, ready for you to use. Unless, of course, you get this dialog box instead.

To Mac neophytes, this can be either annoying, confusing, or mystifying. The power user's trick of opening a suitable application, and holding down the Option key while selecting **Open** from the File menu, may allow documents not created by that application to be



The file "Letter" could not be opened/printed (the application is busy or missing).

OK

opened. For many, however, this may not be part of the Macintosh way. Equally important, this trick may not even be known by most of the non-power users.

HandOff lets users avoid this deadend dialog by launching a substitute application. A simple dialog displays the preferred substitutes, and keeps a permanent list of these replacements.

The latest version of HandOff adds support for the Desktop Manager, Apple software designed for file management on server volumes and used by many who have large capacity hard disk drives. A file extension table is also provided to allow users who import MS-DOS files to map extensions such as WK1 to their spreadsheet application.

HandOff should have been included as part of the System software. Until it is, you'll need to purchase a copy from Software Innovations. (Software Innovations, Inc., PO Box 811, Allen, TX 75002. 214/727-2329)

## HandOff™

by Fred Hollander

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Please Do Not  
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"MacWrite" could not be found to open the selected document(s). Please select an alternate.

Word Program

- ☐ Budget stuff
- ☐ Formula Glossary
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- ☒ Microsoft Word
- ☐ My Stuff
- ☒ PocketBookWrit...
- ☐ Postscript Effects
- ☐ PostScript Gloss...

QuickSelect

Application...

Eject

Drive

Select

Cancel

☒ Substitute for all "MacWrite" docs  
(in effect ONLY while HandOff is active)

# GAME REVIEWS

By Mike Markowitz

## ISHIDO: THE WAY OF STONES

Designed By: Michael Feinberg

Published By: Accolade

For: Macintosh (1Mb black and white, 2Mb color), IBM PC (512K, 640K for VGA) and Amiga (512K, 1Mb for Hard drive installation)

List Price: \$54.95

Ishido means "the way of stones" (or "rocky road") in Japanese. It could be described as a combination of dominoes, mah-jongg and the classic oriental strategy game of Go. Like Go, it is very easy to learn, but full of deep and subtle strategies. It is also a very beautiful game visually, and it includes a sophisticated graphic editor so that you can create your own backgrounds and stone sets.

The game board is a grid of ninety-six squares (8 x 12). The playing pieces are seventy-two stones. Each stone has one of six symbols and six background patterns. At the beginning of the game, six stones, representing a random selection of each pattern and each background, are placed on the board—one in each corner and two in the center. The other stones are then randomly drawn from a "pouch" and played on the board. A stone must be placed adjacent to another stone of matching symbol or background. The most difficult (and valuable) play is the "Four-way Match," which places a stone adjacent to two matching symbols and two matching backgrounds. The game provides solitaire and two-player options and there are several different levels of help—it can even show you all possible plays for the current stone.

The game was originally published in a costly limited edition of one thousand copies (in a handcrafted wooden box), but now Accolade has packaged it for the mass market.

A cardboard code wheel serves as the off-disk copy protection scheme. The fifty-six page illustrated manual is accompanied by a twenty-eight page booklet that recounts the fictional legend of the game's origin.

The Macintosh program uses customized fonts, digitized sound effects and graphics very effectively—even on a small monochrome screen the game is fully enjoyable. The color version is spectacular, requiring about 3Mb of hard disk space. There is an automated installer program that copies the correct files for either version.

Ishido is the best new computer strategy game in several years. It will appeal to anyone who values intuition, logic and abstract patterns.

Ishido is the best new computer strategy game in several years. It will appeal to anyone who values intuition, logic and abstract patterns.

Ishido is the best new computer strategy game in several years. It will appeal to anyone who values intuition, logic and abstract patterns.

## GOLD OF THE AMERICAS

Designed By: Ian Trout and Stephen Hart

Published By: Strategic Studies Group

For: Macintosh (1Mb); IBM PC and Amiga versions have been an-

Ishido is the  
best new  
computer  
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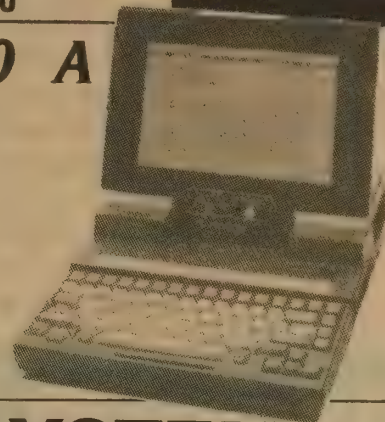
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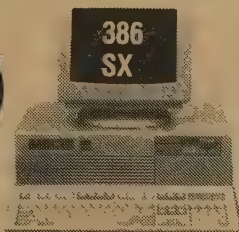


## 386SX SYSTEM

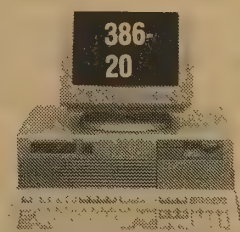
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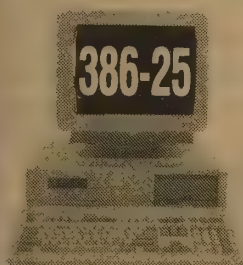


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- ◆ Parallel/Serial Ports
- ◆ 101 Keyboard

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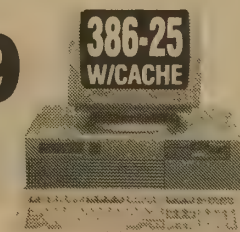
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## 386-25 SYSTEM

- ◆ 80386 25 MHz
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nounced

List Price: \$44.95

This is a straightforward game of exploration, colonization, exploitation and tax avoidance. You take the role of one of the Great Powers in the year 1500: England, France, Spain or Portugal. Your goal is to conquer as much of the New World as possible. Each turn represents a decade of real time—the game ends and victory is determined in 1800. The game map is divided into regions, which are mostly unexplored at the start of play.

At the beginning of each turn you have a budget to spend acquiring armies, colonists, trading ships, and warships. You also have a vari-

able number of explorers, like Cortéz and Drake to lead your expeditions. Explorers are rated with one to three stars, according to ability: "Three-star explorers are very good and can subdue mighty empires. One-star explorers have been known to get lost between their cabin and the poop deck, but might still get lucky."

A sixteen page booklet provides rather sparse documentation, but you have to read all of it to really understand the dynamics of the game. Considering the very high level of abstraction in the design, the game is historically quite "accurate," but it also reflects the designers' rowdy Australian sense of humor:

"The most important event in the turn is the payment of taxes. If you have enough money, the assessed tax is automatically deducted. If you don't have enough money, everything you have is taken anyway..."

"Slaves serve a single function in life, which is to be exploited. Exploiting slaves is ideal because they don't revolt like proud native tribesmen (or not as much) and don't lose loyalty like ungrateful colonists. However, if you don't exploit them, they tend to sit around and do nothing. They cannot be imported while there are still natives remaining in a province."

The Macintosh program has color and monochrome versions. The monochrome version is rather cramped on the small screen—the map tends to get overcrowded

with icons after a few turns.

Gold of the Americas would be an excellent classroom simulation for any teacher who has to cover the Age of Exploration. A good teacher might have to explain to enthusiastic players that the extermination of millions of Native Americans during these three hundred bloody years was an historic crime and tragedy, not just a built-in feature of the game. One wishes for some designer's notes, explaining some of the features of the game and how they interact, but perhaps this will be forthcoming in SSG's quarterly magazine, Run 5.

## PICTIONARY: THE COMPUTER EDITION

Designed By: Domark

Published By: Brøderbund

For: IBM PC (512K, EGA, VGA, CGA Tandy or Hercules graphics), Commodore 64/128 and Amiga (512K)

List Price: \$39.95

Any board game that sells fourteen million copies is a hot property indeed. Brøderbund has now brought this game of quick drawing to the computer. The object of the game is to identify a series of words through clues sketched on the screen. There is a time limit, so the game becomes a race against the clock. Sketches may not include numbers or letters. The game allows from one to four players or teams. You can play against the computer, in a mode that lets the computer do the drawing, or you can play with at least two humans, trying your hand with the keyboard, mouse or joystick. Most users will find it quite difficult to create recognizable drawings without a mouse, so I would not recommend this game for systems that lack a mouse or equivalent pointing device. The program includes a complete drawing package with the familiar "MacPaint" set of graphic tools. The game's database includes 2560 words of varying difficulty, on four colorful laminated cards. In the interests of fairness, players should avoid memorizing these lists.

Pictionary is an unusually intelligent party game, enjoyed by people of all ages and conditions. This straightforward computer implementation should also appeal to many who hate conventional kinds of computer games.

## FLIGHT OF THE INTRUDER

Designed By: Rod Hyde

Programmed By: Chris Orton, Colin Bell, James Taylor, Dave White-side, Steve Parys and Paul Dunscombe

Published By: Spectrum Holobyte

For: IBM PC and compatibles (640K, 8MHz or faster CPU, Hercules, CGA, EGA or 16-color VGA graphics, joystick or mouse recommended, supports AdLib audio card)

List Price: \$59.95

Hot properties rarely make good computer games, especially those that are Soon To Be A Major Motion Picture. After the lawyers and the literary agents have been paid, the lurid box-cover art commissioned, and the licensing fees negotiated, there is rarely enough time or money left for the programmers to do a decent job.

Flight of the Intruder is a pleasing exception.

The big package includes a paperback copy of Steven Coonts's Vietnam-era techno-macho fighter pilot revenge fantasy novel. You will also find a well-illustrated 160-page manual, a keyboard refer-

ence card and four 5.25" disks—one high density disk for the EGA/VGA version and three low-density disks for the CGA version, which is disappointing to any player who has ever seen good graphics.

Considerable effort went into making Flight of the Intruder a permissive environment for the beginning player. You can start out on autopilot, just going along for the ride, and gradually add levels of control as

continued  
on page 165

**Hot properties rarely make good computer games, especially those that are Soon To Be A Major Motion Picture.**



# HI-Q SYSTEMS

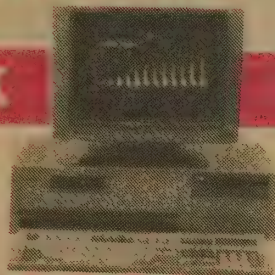
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### HI-Q 386-16 DX MHz VGA SYSTEM w/66 MB

LANDMARK = 21.6 SI = 18

#### 66 MB HARD DISK

- 16 MHz DX CPU
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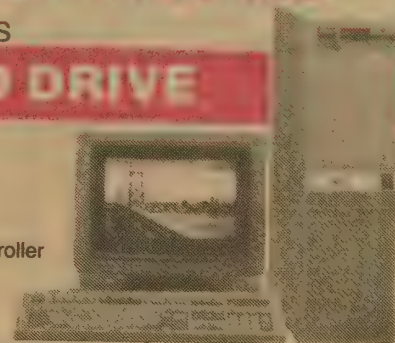
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LANDMARK = 110.8 10.5 MIPS

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- 16 Bit Super VGA Card 1024x768
- 14" VGA Monitor 1024x768
- 1:1 Interleave Hard/Floppy Drive Controller
- Socket for Weitek 4167 Math Co-Processor
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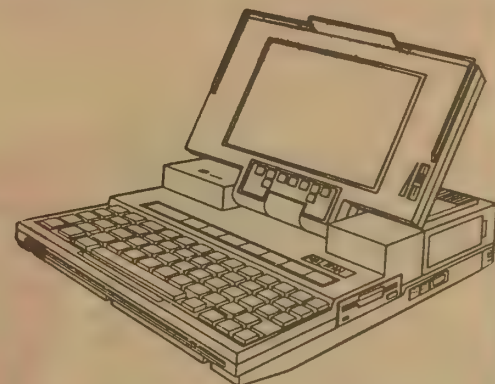
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- 1:1 Interleave Hard/Floppy Drive Controller
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- EISA extended CMOS Set-Up
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- Real Time Clock
- 230 W Power Supply & Vertical Case Holds 6 Drives
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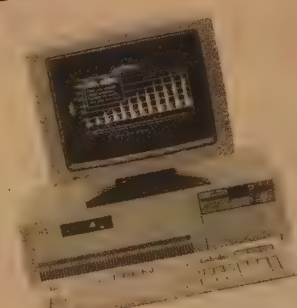
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|---------------|-------|
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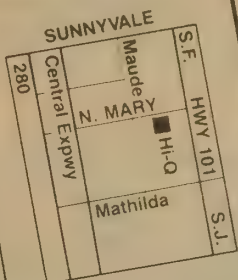
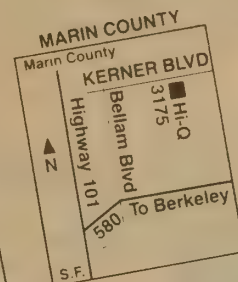
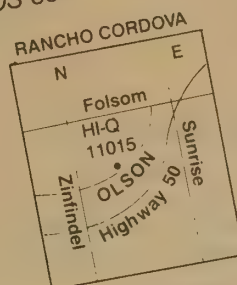
## VERTICAL 386-33 w/64K CACHE

### 200 MB IDE HARD DRIVE SYSTEM

- Landmark = 58.5 SI = 45.9
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- 2 Serial, 1 Parallel, 1 Game Port
- Real Time Clock/CMOS Memory w/Battery Back-Up
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- 101 Key Keyboard
- Supports-MS DOS, OS/2, PC-MOS/386, UNIX, XENIX, DR, DOS, Concurrent DOS 386
- 64K Cache

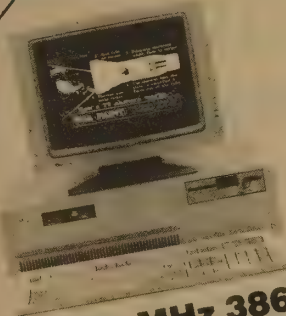


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### Hi-Q 16/20 MHz 386-SX Landmark = 19.5 SI = 18 66 MB HARD DRIVE

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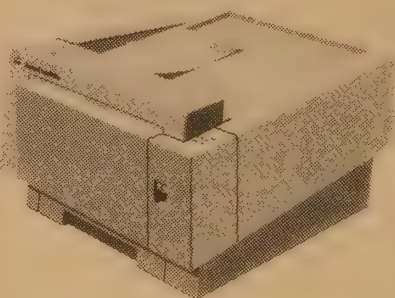
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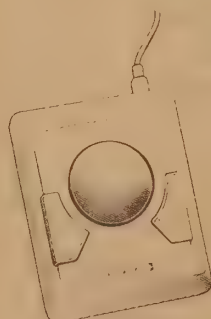
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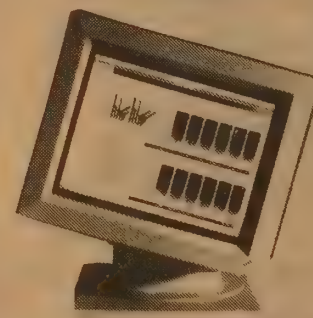
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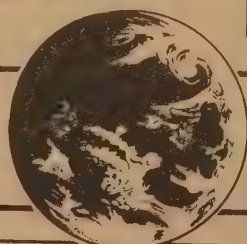
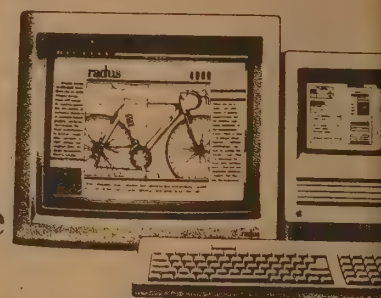
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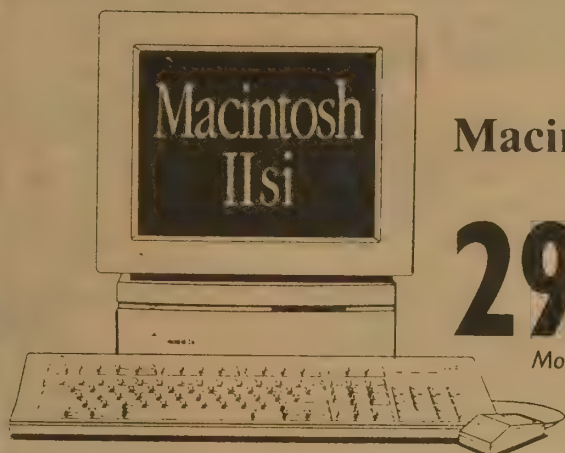
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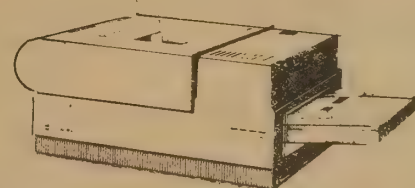


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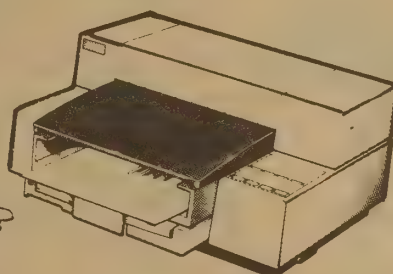
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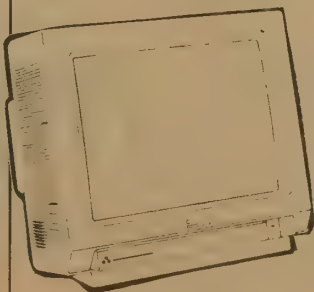
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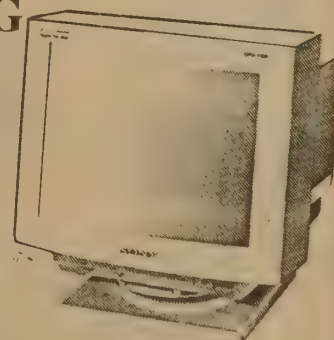
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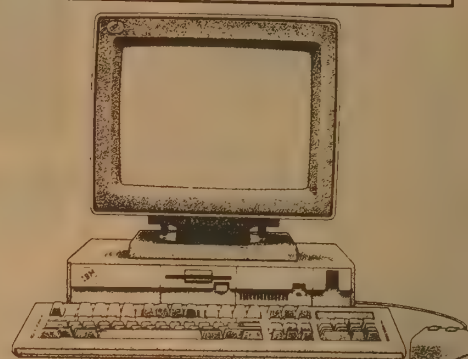
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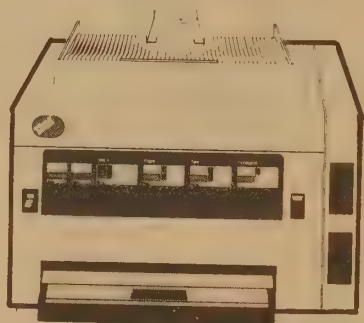
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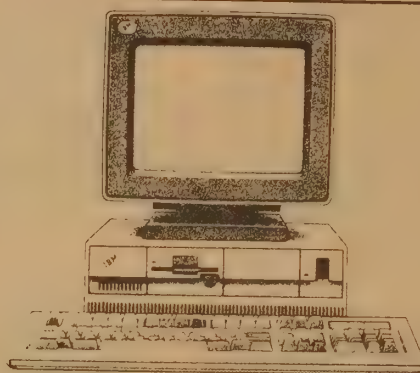
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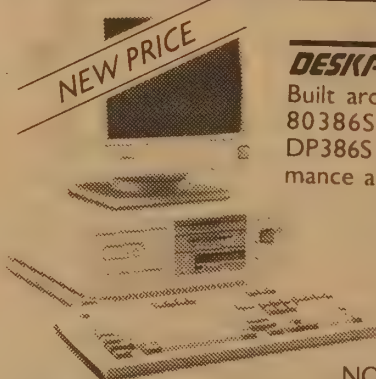
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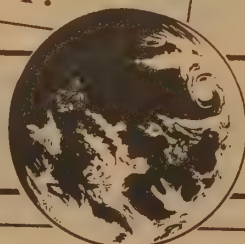
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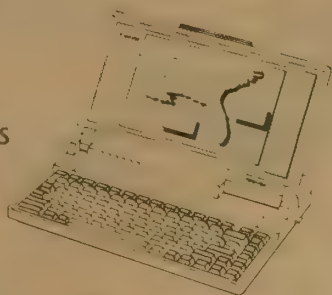


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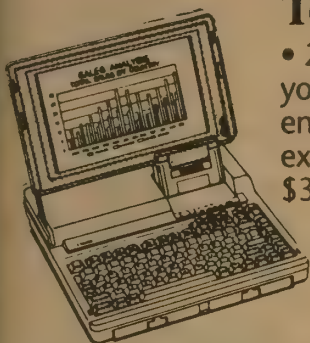
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## Toshiba T1600/40

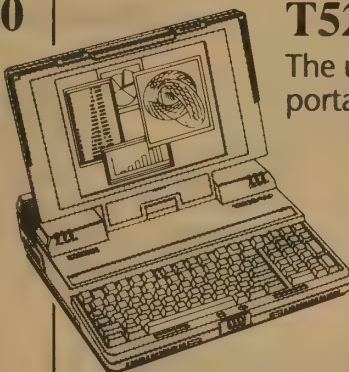
• 286 power, whenever you need it • New enhanced display • Free extra battery included A \$39 value.



# 2599.

## T5200/100

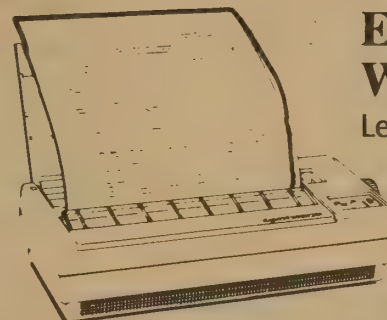
The ultimate in power and portability.



# 5095.

## Express Writer301

Letter quality



# 295.

## POQET™



## Come See the New Poqet Computer

### The Poqet PC™

Everything you need, in a size you've always wished for.

• 2-3 months of normal use on two AA alkaline batteries • MS-DOS 3.3 runs your favorite PC software • Dimensions: 8.8" x 4.2" x 1.0" • QWERT-style keyboard • 80-character X25-line screen • LCD display with monochrome graphics • Built-in productivity tools

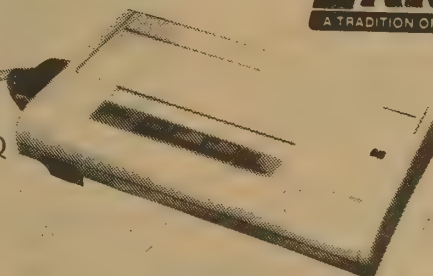


PERSONAL PRINTER PRODUCTS

## Kodak Diconix 150 Plus

The laptop companion that prints in draft, NLQ and/or quality mode, designed with portability in mind.

# 379.



## TARGUS

A TRADITION OF EXCELLENCE

We feature the Targus cases for the Toshiba portables and the Macintosh portables. Superior construction and materials make the Targus cases a best buy.



Try A Portable  
**KODAK DICONIX Printer**  
In-Store and Get a Free  
**KODAK WEEKEND 35**  
Camera.

Offer Expires December 31, 1990



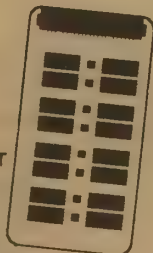
## Apricorn Memory

• Lifetime warranty • Available for all Toshiba portables • This month's specials



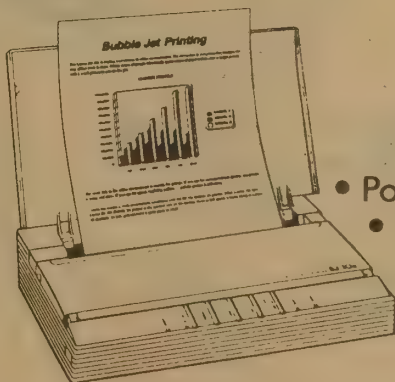
# 299.

2MB  
T1200XE



# 449.

2MB  
T1000SE/XE



## Canon

BUBBLE JET PRINTER  
**BJ-10e**

• Portable 300 dpi printer  
• Optional sheet feed

# 399.

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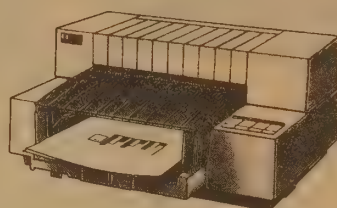
# Connecting Point®







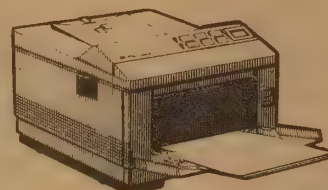
**HEWLETT  
PACKARD**



### DeskJet 500 Printer

- Improved print quality • Added internal fonts • 3 year warranty • Water resistant ink cartridges

**569.**

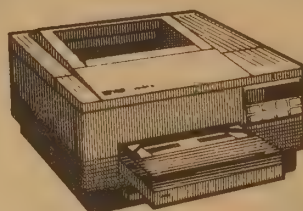


### LaserJet IIP Printer

- Most affordable HP laserjet printer
- Publication quality output

**949.**

Beginning 10/1/90  
Buy a IIP Printer  
A \$195<sup>00</sup> VALUE  
Get a FREE Optional Lower Cassette  
See Stores for Coupon



### LaserJet III Printer

- Now Hewlett-Packard LaserJet printers are PC or Macintosh compatible
- Appletalk® compatibility with optional interface
- Dependable HP performance

Hewlett Packard  
AppleTalk for  
LaserJet III & IIP



### ScanJet Plus Scanner

- 256 grey scale levels (8 bit) for high-resolution images • Wide range of contrast & intensity control
- PC or Macintosh compatible
- Price includes interface

**1495.**

**BEST  
PRICE**

### PaintJet Color Graphics Printer

- High quality color charts & graphics
- PC or Macintosh compatible • Wide range of software support

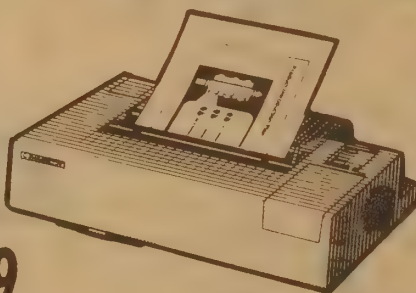
### Print Kit for Macintosh

HP color print kit for Apple Macintosh computers

\*Interface required to hook Macintosh with PaintJet and PaintJet XL Printers)

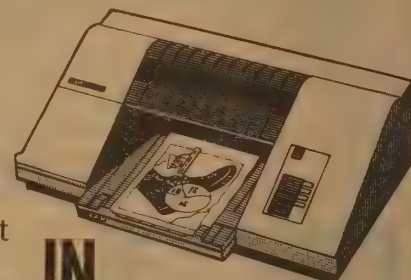
**995.**

**99.**



### PaintJet XL Color Graphics Printer

- Enhanced PaintJet quality
- Faster print speed
- Presentation mode — for highest quality graphics on paper
- Transparency mode



**IN  
STOCK**

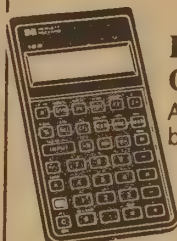


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PACKARD**

## HEWLETT PACKARD CALCULATOR THE BEST FOR YOUR SUCCESS



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PACKARD**



### HP 10B Business Calculator

All the essentials for business

**34<sup>95</sup>**



### HP 20S Scientific Calculator

A program library to solve your challenging problems

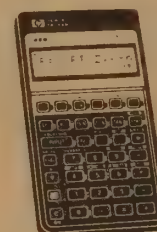
**34<sup>95</sup>**



### HP 21S Stat/Math Calc.

• A life saver in the classroom • Algebraic entry system

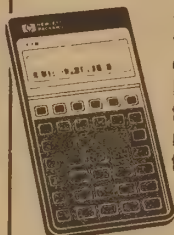
**45.**



### HP 22S Scientific Calculator

• Built-in equations • Algebraic entry system

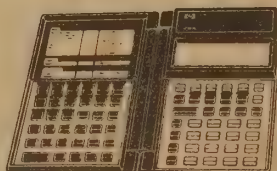
**49.**



### HP 17B11 Calc.

• Built-in algebraic entry & HP's efficient RPN • Over 250 functions for real estate & finance

**99.**



### HP 28S\* Advanced Scientific Calc.

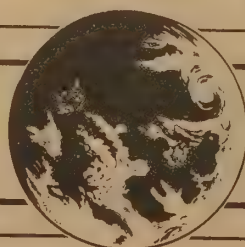
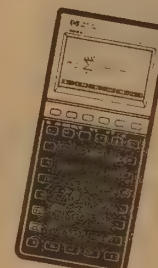
• For technical & professional students • RPN entry system

**205.**

### HP 48SX Scientific Expandable Calc.

• Over 2100 built-in functions • RPN entry system

**325.**



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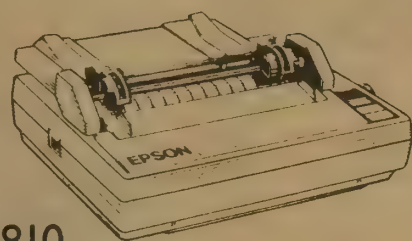


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## TWO YEAR WARRANTY ON ALL EPSON PRINTERS

### All-In-One Mobile Microcomputer Center

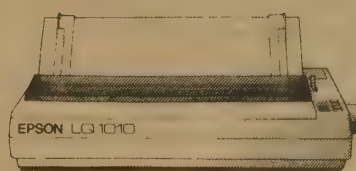
The answer to your storage problem. This space saver is designed to organize your entire microcomputer system – including your printer – in less than three square feet of floor space. Crafted from wood solids and matching veneers, this is a high quality solution for your computer furniture needs.



#### LX-810

- 9 pin • SmartPark™ paper handling
- 200 cps super draft • 30 cps NLQ
- High resolution graphics

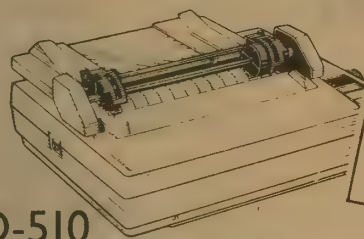
**179.**



#### LQ-1010

- 180 CPS draft, 60 CPS letter quality
- 24 pin, 360x360 dpi graphics
- SmartPark™ and SelectType • Wide carriage

**445.**

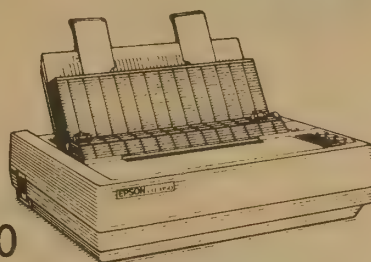


#### LQ-510

- Featuring SmartPark™ paper handling
- 180 CPS draft • 56 CPS letter quality • 2 resident letter quality fonts

**285.**

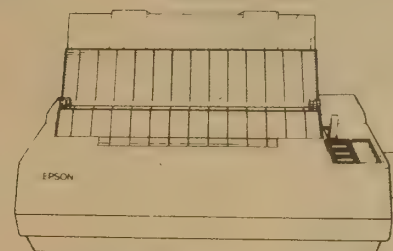
FREE  
MULTI-MODE  
FONT WITH  
PURCHASE OF  
LQ-510



#### LQ-860

- Epson's newest letter quality color printer • 300 cps draft
- 98 cps NLQ

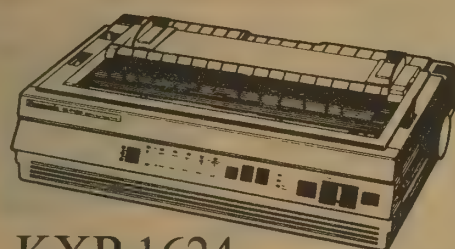
**IN STOCK**



#### FX-850

- 9 pin dot matrix
- 264 draft 54 NLQ • Push tractor paper park for single sheet feed

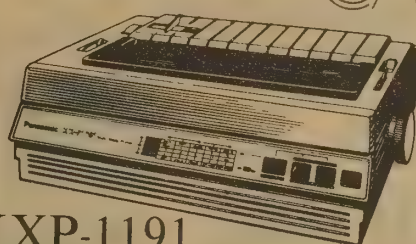
**369.**



#### KXP-1624

- 24 pin • EZ set control panel • 192 cps draft • 63 cps NLQ • 7 resident fonts • 16.5" wide carriage
- push/pull tractor
- 360 x 360 dpi graphics

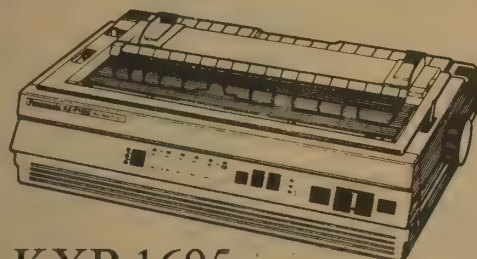
**399.**



#### KXP-1191

- 9 pin • EZ set control panel
- 240 cps draft
- 48 cps NLQ
- 6 resident fonts
- push/pull tractor

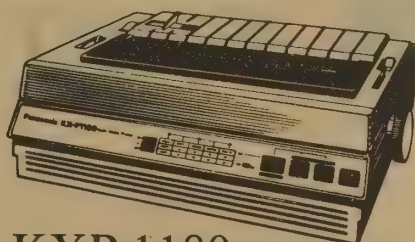
**259.**



#### KXP-1695

- 9 pin • EZ set control panel • 330 cps draft • 66 cps NLQ • 8 resident fonts • 16.5" wide carriage • push/pull tractor • Rear, bottom and front paper feed

**395.**



#### KXP-1180

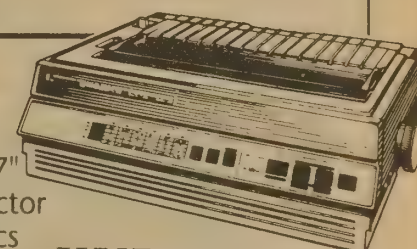
- 9 pin • EZ set control panel • 192 cps draft
- 38 NLQ • 6 resident fonts
- push/pull tractor
- 11.7" carriage

**159.**

**Panasonic**  
Office Automation

- 24 pin • EZ set control panel • 192 cps draft • 63 cps NLQ
- 7 resident fonts • 11.7" carriage • push/pull tractor
- 360 x 360 dpi graphics

**BEST PRICE**



#### KXP-1124

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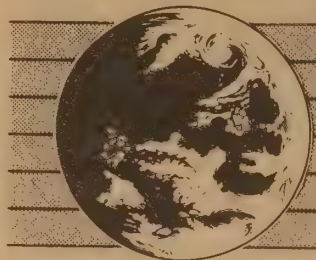
#### WEA COMPUTERS

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San Jose  
(408) 554-8300

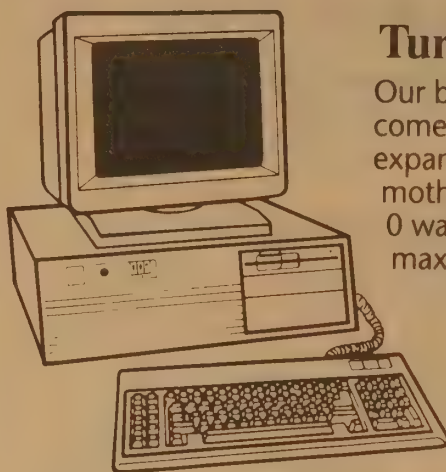
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### Turbo 286 12

Our best selling Turbo 286 comes w/512K of memory expandable to 4MB on the motherboard. 12 Mhz at 0 wait states means maximum speed.

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Monitor, display card extra

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### 386SX/40MB

- 16Mhz 386SX
- 1MB RAM
- 1.2MB floppy
- 40MB hard drive
- 1:1 hard drive controller
- DOS 4.01
- 1 year limited on-site warranty
- 101 keyboard
- 2 serial 1 parallel port

**1195.**

### WEA S486-25 Standard

- 4MB RAM upgradable to 8MB on motherboard; 16MB w/32 bit memory card
- I/O, 1.2MB FD, 101 keyboard
- IDE controller
- Desktop case
- AMI BIOS
- 64K RAM cache, upgradable to 256K
- 1-32/8 bit slot
- 6-16 bit slot
- 1-3 bit slot
- Weitek math co-processor socket

**3295.**

**1495.**

**999.**

### 386/20

- True 20 Mhz 386 motherboard
- 1:1 HDC • 1.2 FD • 101 keyboard • 1MB RAM

### 386/25Mhz

- 1MB RAM • 1.2MB floppy drive
- 1:1 hard drive controller • 64k cache
- 101 keyboard

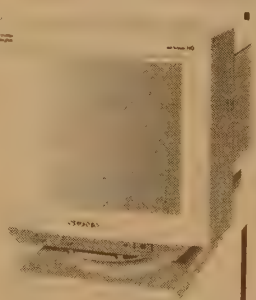
## VIDEO

### SONY

#### Sony 1320 VGA

- VGA color monitor
- Analog input
- .25mm aperture grid

**499.**



### HYUNDAI

#### HCM-402D

- 14" VGA color
- .31 dot pitch
- Includes tilt & swivel base

**BEST PRICE**



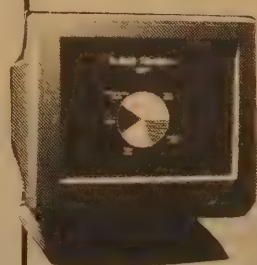
### SAMSUNG

#### MZ4575

#### 14" Monitor

- Flat screen • Black and white only • 122 col, 640h x 720v with tilt and swivel

**119.**



### Hyundai HMM-1201A 12" Monitor

- 12" Amber flat screen 720h x 350v with tilt and swivel

**BEST PRICE**

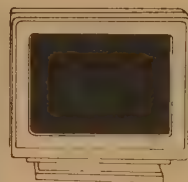


### NEC

#### MultiSync 3D

The NEC 3D is one of the best multiscan monitors made. 1024x768 resolution means you can use sophisticated Super VGA software and hardware with this screen.

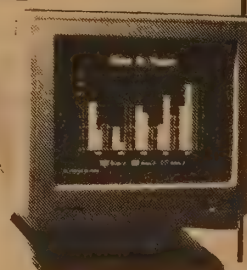
**599.**



### Hyundai HMM-1401A 14" Monitor

- 14" Amber flat screen 720h x 350v with tilt and swivel

**BEST PRICE**



### SIGMA DESIGNS

#### Sigma VGA Legend

- 1024 x 768 • 16 colors
- Interlaced or non-interlaced
- No switchers or jumpers
- 512K video memory upgradable to 1MB • Exceeds European Ergonomic standards for flicker-free displays
- Upgrade kits in stock (VGA CARD ONLY)



**279.**

#### VIDEO CARDS

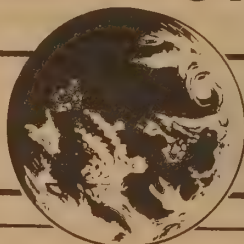
|                                 |      |
|---------------------------------|------|
| HYUNDAI 8 BIT VGA               | 199. |
| HYUNDAI 16 BIT VGA              | 229. |
| EVERGRAPHICS PLUS MONO/GRAPHICS | 59.  |
| PARADISE BASIC VGA              | 99.  |

#### MATH CO-PROCESSORS

|                                                     |      |
|-----------------------------------------------------|------|
| 80387-16                                            | 349. |
| 80387-16SX (16MHZ "SX" SYSTEM ONLY)                 | 329. |
| 80387-20                                            | 379. |
| 80387-25                                            | 469. |
| 80387-33                                            | 589. |
| 80C287A-12.5 (FOR CMOS TYPE LAPTOP 12MHZ COMPUTERS) | 289. |
| BOX287XL (8-29MHZ VARIABLE SPEED)                   | 259. |
| BOX287XLT (FOR COMPAQ LTE286 ONLY)                  | 259. |

#### HARD DRIVES

|                                    |      |
|------------------------------------|------|
| SEAGATE ST 251-1 40MB 28MS         | 329. |
| SEAGATE ST 4096 80MB 28MS          | 579. |
| SEAGATE ST 277R                    | 379. |
| MICROPOLIS 1654-7 150MB 16MS       | 899. |
| TOSHIBA MK134FA 65MB 28MS          | 399. |
| TOSHIBA MK72PCR 110MB 28MS         | 699. |
| QUANTUM PRO 40S (SCSI) 42MB 19MS   | 399. |
| QUANTUM PRO 80S (SCSI) 84MB 19MS   | 599. |
| QUANTUM PRO 105S (SCSI) 105MB 19MS | 729. |

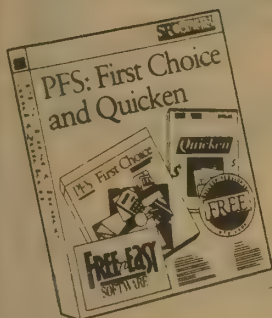


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**SPC SOFTWARE PUBLISHING CORPORATION**



**First Choice w/Quicken FREE**  
With PFS First Choice you'll have five versatile business applications in one program — word processing, database, spread sheets, graphics and electronic communications. Add Quicken and you'll have hassle-free check writing, bill paying, tax record keeping, business book keeping and reporting all at no extra cost.

**89.**

**Microcom**

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Virus protection for Macintosh and IBM compatibles.



Virex.....69.

Virex-PC.....89.

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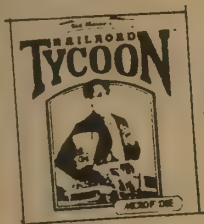
Remote control trouble shooting or training VIA a modem  
•Carbon copy gives your computer complete control of another computer



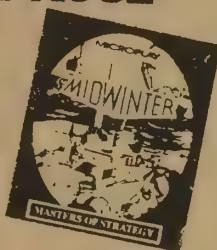
Carbon Copy plus....129.

Carbon Copy/Mac....129.

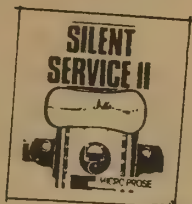
**MICRO PROSE**



**39.**

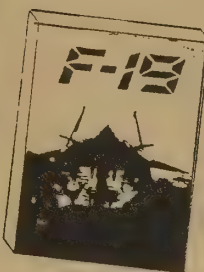


**39.**



**39.**

**49.**



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**INTRODUCTION PRICE**

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**CLARIS™**



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The Ultimate Typing Machine™ now fits in the palm of your hand.

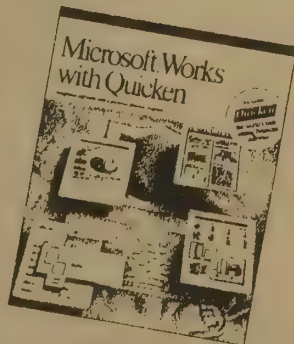
**549.** For Macintosh

**CAERE**

**Microsoft®**

Microsoft Works for Macintosh with Quicken

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**Microsoft**

Microsoft Windows

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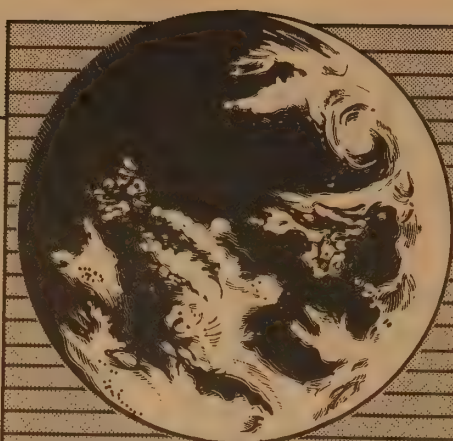
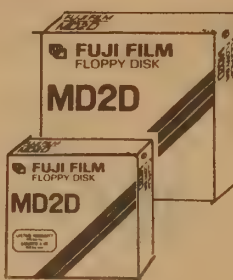
**FREE  
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as the FREE 11th disk



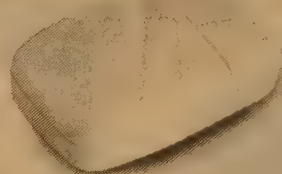
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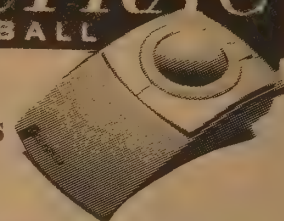
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• MacTRAC is available in versions which support all Macintosh computers  
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Serial Version **49<sup>95</sup>** Bus Version **59<sup>95</sup>**

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The Commodore Amiga 3000, developed for the professional user, is a unique and remarkably versatile personal computer. Its advanced hardware and easy-to-use operating system allow corporate and government computer users, graphic designers, videographers, professional musicians, educators and even home computer users to manipulate vast amounts of data and color images.

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# PRODUCT SPOTLIGHT

Continued from page 152

you gain confidence with the system. Nevertheless, the sheer variety of options and challenges can be overwhelming. Aircraft carrier landings are among the most difficult feats in flying, or in flight simulation. Spectrum Holobyte has many years of experience in programming exciting games that accurately reflect combat aircraft performance. Flight of the Intruder sets a new standard in the state of this art.

## COSMOS: THE COMPUTER GO PARTNER, RELEASE 3.0

Designed And Programmed By: Dave Fotland

Published By: Ishi Press, 1400 North Shoreline Blvd., Bldg. A-7, Mountain View, CA 94043. (415)964-7294

For: IBM PC (512K, supports mouse, requires Hercules, MDA, CGA, EGA or VGA graphics)

List Price: \$39.95

In Japanese culture, the game of Go holds a place similar to that of chess in Western European cultures—a seemingly simple game of abstract conflict that has occupied generations of the most powerful intellects. Invented in China (where it is known as Wei ch'i) the game is played with round black and white stones on a simple 19-by-19 square grid. The stones are played on the intersections of the lines, rather than inside the squares. Players alternate in placing a stone anywhere on the board; the objective is to capture territory by encircling it. If you completely surround a group of enemy stones, you capture it.

With its subtle interweaving of encirclements and counter-encirclements, Go is perhaps even more resistant to brute-force algorithmic computer solution than chess. It holds a special fascination for many programmers—did you know that the name "Atari" is a technical term from Go? It describes a group of stones that are vulnerable to capture.

Cosmos is a computer Go partner. It is the strongest Go program available on a microcomputer, playing at a very high level of mastery. The program was designed to function as a tutor—it can explain the reasons for its moves, suggest a move for you, estimate the current score and record a game for later study. You can vary the depth of the program's calculation—how far

ahead it will look in determining its move—at the higher levels, the game slows down considerably, as you would expect. A 48-page booklet explains the rules of the game, and the basic elements of Go strategy.

Reasonably priced and simply packaged, this elegant implementation of the world's oldest strategy game belongs in the library of every serious PC gamer.

You may never become a master, but you will learn a lot from this very different way of thinking about strategy. ■

Product Spotlight continued on page 170



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| HP LASER Model      | MEMORY Added            | HP Part | AMT Price                 |
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|                     | 4MB MODULE ..... 33445B |         | <b>299<sup>00</sup></b>   |

| AST Model                 | MEMORY Added              | AST Part | AMT Price                |
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| <b>BRAVO/286</b>          | 512K KIT ..... 500510-010 |          | <b>\$70<sup>00</sup></b> |
|                           | 2MB KIT ..... 500510-002  |          | <b>185<sup>00</sup></b>  |
|                           | 4MB KIT ..... 500510-008  |          | <b>360<sup>00</sup></b>  |
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|               | 2MB KIT ..... 500510-002 | <b>299<sup>00</sup></b>   |
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| 68010 8MHz      | 60 <sup>00</sup>    |

| CPU CHIPS   | Price               |
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| 80386 DX-20 | 350 <sup>00</sup>   |
| 80386 DX-25 | 399 <sup>00</sup>   |
| 80386 DX-33 | 400 <sup>00</sup>   |
| 80386SX-16  | 250 <sup>00</sup>   |
| V-20-8      | 6 <sup>00</sup>     |
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| DRAM                    | Price              |
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| 1 MGXI-80 NS            | 5 <sup>50</sup>    |
| 1 MGXI-70 NS            | 5 <sup>75</sup>    |
| 1 MGXI-60 NS            | 7 <sup>50</sup>    |
| <b>DRAM 256XI</b>       |                    |
| 256XI-150 NS            | \$17 <sup>00</sup> |
| 256XI-120 NS            | 1 <sup>00</sup>    |
| 256XI-100 NS            | 2 <sup>00</sup>    |
| 256XI-80 NS             | 2 <sup>25</sup>    |
| 256XI-70NS              | 2 <sup>50</sup>    |
| 256XI-60 NS             | 3 <sup>00</sup>    |
| <b>DRAM 256X4</b>       |                    |
| 256X4-120 NS            | \$5 <sup>00</sup>  |
| 256X4-100 NS            | 5 <sup>50</sup>    |
| 256X4-80 NS             | 5 <sup>75</sup>    |
| 256X4-70 NS             | 6 <sup>00</sup>    |
| 256X4-60 NS             | 8 <sup>00</sup>    |
| <b>DRAM 64XI</b>        |                    |
| 4164-15                 | \$15 <sup>00</sup> |
| 4164-12                 | 1 <sup>00</sup>    |
| 4164-10                 | 2 <sup>50</sup>    |
| <b>DRAM 64X4</b>        |                    |
| 4464-150                | \$2 <sup>00</sup>  |
| 4464-120                | 2 <sup>50</sup>    |
| 4464-100                | 2 <sup>75</sup>    |
| 4464-80                 | 3 <sup>00</sup>    |
| <b>256XI-STATIC COL</b> |                    |
| 51258 P-10              | \$2 <sup>00</sup>  |
| AAA 2800-08             | 3 <sup>00</sup>    |
| AAA 2800-07             | 3 <sup>25</sup>    |
| AAA 2800-60             | 4 <sup>50</sup>    |
| 1X4-80 ZIPP             | 35 <sup>00</sup>   |
| 1X4-80 ZIPP STT         | 50 <sup>00</sup>   |
| 4X1-80                  | CALL               |

| VIDEO RAM FOR VIDEO CARDS   | Price             |
|-----------------------------|-------------------|
| 64X4-150 NS 412642-15       | \$4 <sup>00</sup> |
| 64X4-120 NS 412642-12       | 4 <sup>00</sup>   |
| 64X4-100 NS 412642-10       | 5 <sup>00</sup>   |
| <b>CACHE MEMORY 16X4</b>    |                   |
| HM 6788-25                  | \$6 <sup>50</sup> |
| MC 6288-35                  | 9 <sup>50</sup>   |
| 64X4 CACHE MEMORY HM6708P25 | 24 <sup>00</sup>  |

| MATH COPROCESSORS       | Price               |
|-------------------------|---------------------|
| <b>INTEL</b>            |                     |
| 8087-5MHz               | \$80 <sup>00</sup>  |
| 8087-2 8MHz             | 116 <sup>00</sup>   |
| 8087-1 10MHz            | 140 <sup>00</sup>   |
| 80287-6 6MHz            | 130 <sup>00</sup>   |
| 80287-8 8MHz            | 185 <sup>00</sup>   |
| 80287XL 8/10MHz         | 185 <sup>00</sup>   |
| 80287XTL 12MHz (Laptop) | 210 <sup>00</sup>   |
| 80287-10 10MHz          | 185 <sup>00</sup>   |
| 80C287-12 12MHz         | 185 <sup>00</sup>   |
| 80387SX-16              | 285 <sup>00</sup>   |
| 80387SX-20              | 310 <sup>00</sup>   |
| 80387-16                | 295 <sup>00</sup>   |
| 80387DX-20              | 340 <sup>00</sup>   |
| 80387DX-25              | 425 <sup>00</sup>   |
| 80387DX-33              | 525 <sup>00</sup>   |
| <b>WEITEK</b>           |                     |
| 3167-20 20MHz           | \$300 <sup>00</sup> |
| 3167-25 25MHz           | 350 <sup>00</sup>   |
| 3167-33 33MHz           | 500 <sup>00</sup>   |
| <b>CYREX</b>            |                     |
| 83087-16 16MHz          | \$260 <sup>00</sup> |
| 83087-20 20MHz          | 295 <sup>00</sup>   |
| 83087-25 25MHz          | 385 <sup>00</sup>   |
| 83087-33 33MHz          | 440 <sup>00</sup>   |
| 83SX87-16 16MHz         | 235 <sup>00</sup>   |
| 83SX87-20 20MHz         | 260 <sup>00</sup>   |
| <b>IIT</b>              |                     |
| 8C87-8                  | \$185 <sup>00</sup> |
| 8C287-10                | 175 <sup>00</sup>   |
| 8C287-12                | 200 <sup>00</sup>   |
| 8C287-20                | 230 <sup>00</sup>   |
| 8C387-20                | 280 <sup>00</sup>   |
| 8C387-25                | 375 <sup>00</sup>   |

| STANDARD SIMMS  | Price              |
|-----------------|--------------------|
| 256KX8 150NS    | \$15 <sup>00</sup> |
| 256KX8 120NS    | 16 <sup>00</sup>   |
| 256KX8 100NS    | 17 <sup>00</sup>   |
| 256KX8 80NS     | 20 <sup>00</sup>   |
| 256KX9 150NS    | 16 <sup>00</sup>   |
| 256KX9 120NS    | 18 <sup>00</sup>   |
| 256KX9 100NS    | 20 <sup>00</sup>   |
| 256KX9 80NS     | 22 <sup>00</sup>   |
| 256KX9 70NS     | 25 <sup>00</sup>   |
| 256KX9 60NS     | 30 <sup>00</sup>   |
| 256KX9 80NS S/C | 25 <sup>00</sup>   |
| 256KX9 70NS S/C | 25 <sup>00</sup>   |
| 256KX9 60NS S/C | 30 <sup>00</sup>   |
| 1MX8 120NS      | 40 <sup>00</sup>   |
| 1MX8 100NS      | 45 <sup>00</sup>   |
| 1MX8 80NS       | 48 <sup>00</sup>   |
| 1MX8 70NS       | 45 <sup>00</sup>   |
| 1MX9 120NS      | 45 <sup>00</sup>   |
| 1MX9 100NS      | 48 <sup>00</sup>   |
| 1MX9 80NS       | 49 <sup>00</sup>   |
| 1MX9 70NS       | 52 <sup>00</sup>   |
| 1MX9 60NS       | 60 <sup>00</sup>   |
| 1MX9 100NS S/C  | 65 <sup>00</sup>   |
| 1MX9 80NS S/C   | 70 <sup>00</sup>   |
| 1MX9 70NS S/C   | 75 <sup>00</sup>   |
| 1MX9 60NS S/C   | 75 <sup>00</sup>   |
| 4MX8 80NS       | 250 <sup>00</sup>  |
| 4MX9 80NS       | 275 <sup>00</sup>  |
| 4MX9 70NS       | 295 <sup>00</sup>  |

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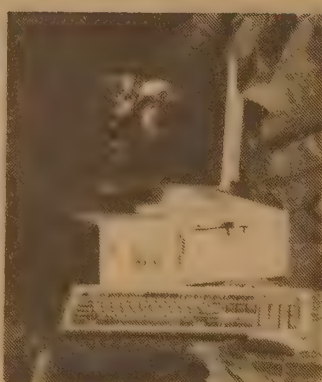


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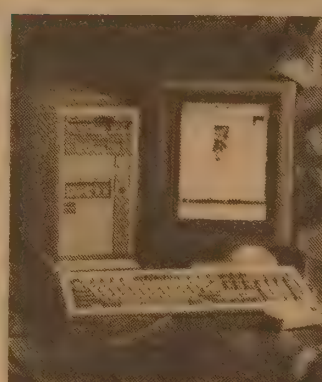


## KRIS SYSTEM 38

- 80386-25MHz CPU
- 0 Wait, interleaved memory
- Supports 80387 coprocessor
- Ergonomic desktop case w/230W & extra drive bays
- 1.2MB 5.25" or 1.44MB 3.5" TEAC floppy drive
- 2MB 80ns RAM, 16MB max.
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- Enhanced 101 keyboard
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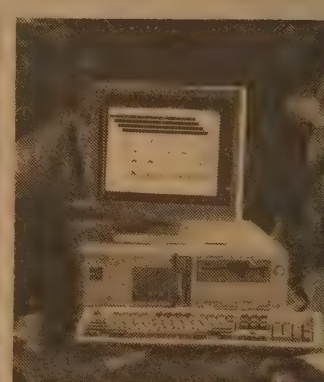


## KRIS SYSTEM 38SX

- 80386SX-16MHz CPU
- 0 Wait, interleaved memory
- Supports 80387SX coprocessor
- Spacesaver micro-tower case
- 200W power supply
- 1.2MB 5.25" or 1.44MB 3.5" TEAC floppy drive
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- Shadow RAM for BIOS
- IDE HDD/FDD controller
- 1 Parallel & 2 Serial ports
- Enhanced 101 keyboard
- 45-day \$-back Guarantee
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KRIS Retail: \$1,399  
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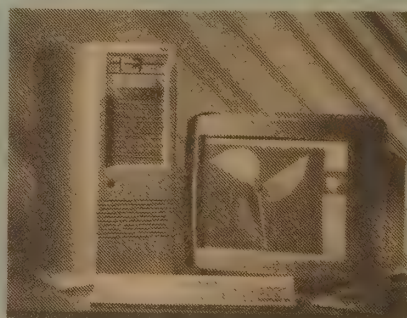


## KRIS SYSTEM 28

- 80286-12MHz CPU, user-switchable down to 8MHz
- 8 expansion slots
- Supports 80287 coprocessor
- Ergonomic desktop case w/200W power supply
- 1.2MB 5.25" or 1.44MB 3.5" TEAC floppy drive
- 1MB 100ns RAM
- IDE HDD/FDD controller
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SINGA Motherboards: 286-16 NEAT \$265, Baby-AT 386-20MHz \$325  
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CONTROLLER.....\$134 qty 50

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25ms.....\$344  
85 MB WDAC280,  
18ms.....\$498  
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18ms.....\$768  
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18ms.....\$1348

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1024x768, 512K)...\$398  
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MS DOS.....\$58  
Tower Case.....\$180  
Mini Tower Case....\$110  
Regular AT Case.....\$52  
Baby AT Case.....\$52

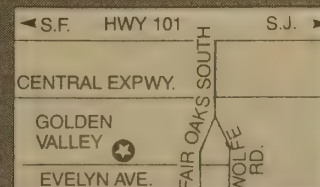
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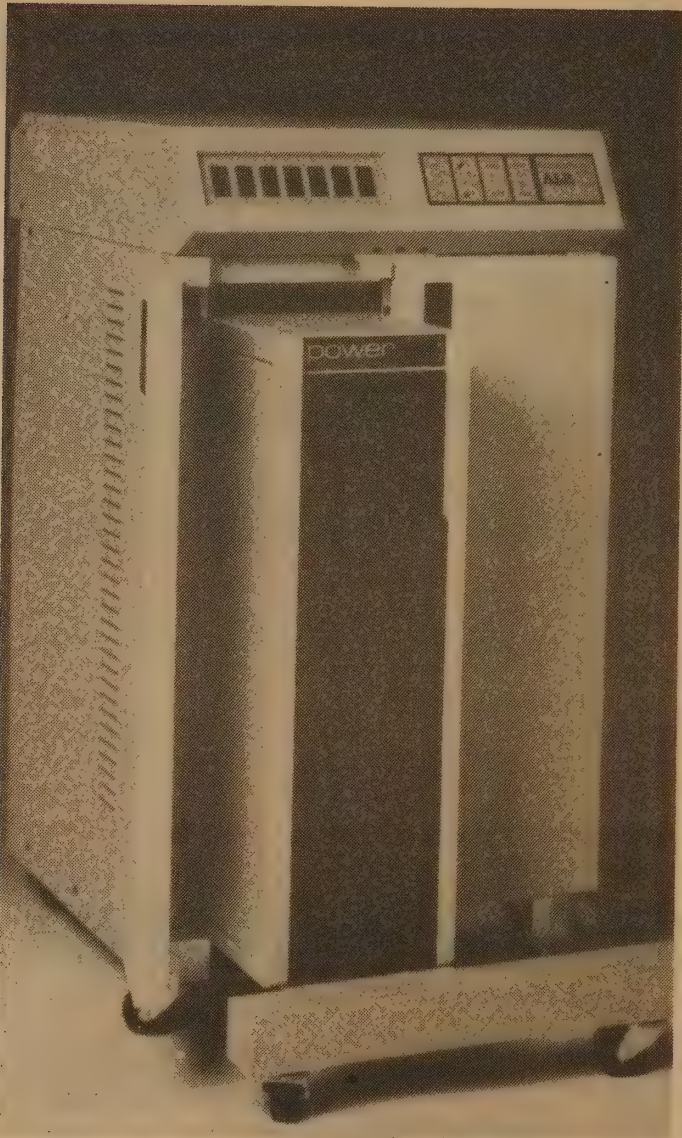




# PRODUCT SPOTLIGHT

Continued from page 165

## LOCAL AREA NETWORKS



### ALR SUPER SERVER

The ALR BusinessServer is a NetWare-ready server designer for large Novell networks or multiuser data-intensive environments. The BusinessServer systems are based on a variety of ALR i386, i486 EISA, ISA or Micro Channel-compatible hardware configurations. They accommodate a total of eight storage bays, six full-height SCSI hard drives on the minicomputer-style chassis and two on the internal high-performance CPU unit. The systems come standard with a 330Mb or a 650Mb hard drive and can accommodate up to 10Gb of storage. Twelve month, optional on-site and extended warranty are available. The starting suggested retail price is under \$15,000. Advanced Logic Research, Inc., 9401 Jeronimo, Irvine, CA 92718. (714)581-6770.

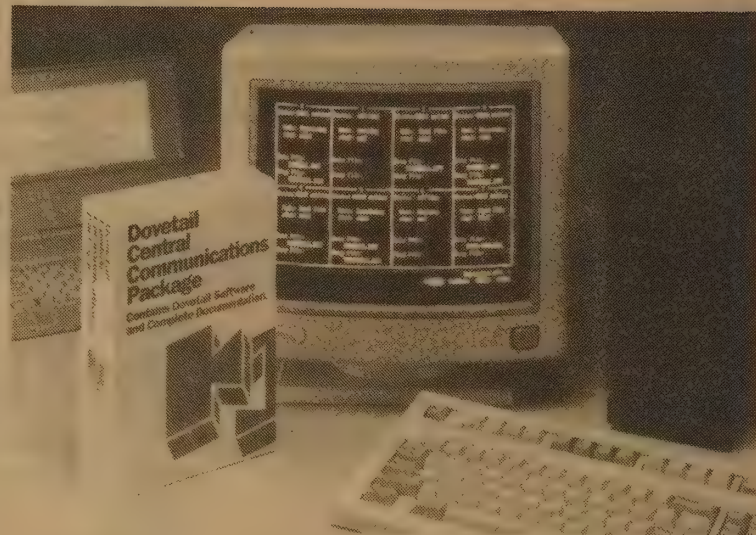
### EISA 486 FILESERVER

Fortron/Source, a growing Bay Area manufacturer of IBM compatible computers, has introduced its newest model, the NetSet EISA 486 fileserver. Built around Intel's 25MHz 80486 CPU, the base configuration includes a 150Mb SCSI hard disk drive, 4Mb RAM and an EISA SCSI hard disk drive controller. This system is packed in a 10-bay, tower-style case and has the expansion capability to support ten half-height devices. At the heart of the system is a proprietary EISA/SCSI host adapter with a 386SX CPU embedded within the controller. This specially designed unit, which can hold up to 8Mb RAM, regulates the hard disk drive controller, ensuring a maximum possible transfer rate of 32Mb/second at EISA burst mode. (\$9500) Fortron/Source, Inc., 6818-G Patterson Rd., Livermore, CA 94550. (415)373-1008.



### DOVETAIL FILE TRANSFER SERVER

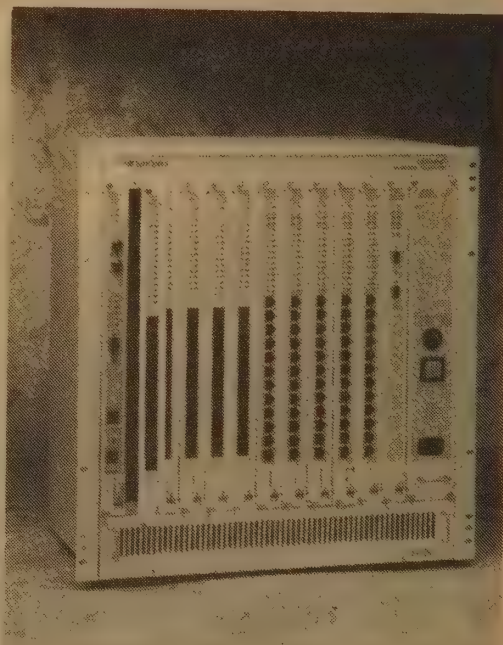
Dovetail is a file transfer server that supports up to eight dial-up sessions simultaneously, while routing files to the appropriate network applications in real-time or batch mode. Dovetail also transpar-



ently manages error detection and recovery, session recovery, file collision and security, thus allowing the development of a fully automated, protection grade file transfer system. The Remote Module includes utilities for the the development of automated file transfer applications using locally available tools, e.g., 4GL, Dos Batch Commands or existing applications. (Basic package starts at \$995, no royalty fee for client module) Dovetail Communications Technologies, Inc., 1050 Northgate Dr., Suite 455, San Rafael, CA 94903. (415)492-1303.

### SYNOPTICS TOKEN RING SOLUTION

In 1987 SynOptics introduced technology that runs the Ethernet networking access method over unshielded twisted pair telephone wire at 10Mb-per-second (Mb/s). For 1990, SynOptics Communications' 4 and 16Mb/s Token Ring module options for the System 3000 intelligent wiring hub continue to meet the increasing demand for use of ordinary telephone wire for data communications. Its new "active hub" approach, on the LattisNet Token Ring UTP, allows use of ordinary unshielded twisted pair telephone wire for high-speed transmission over longer lengths of cable than previously possible. This new technology also significantly increased the number of stations that can be configured in a single Token Ring network. The addition of a new fiber optic repeater module will extend trunk ring interconnections between concentrators to up to



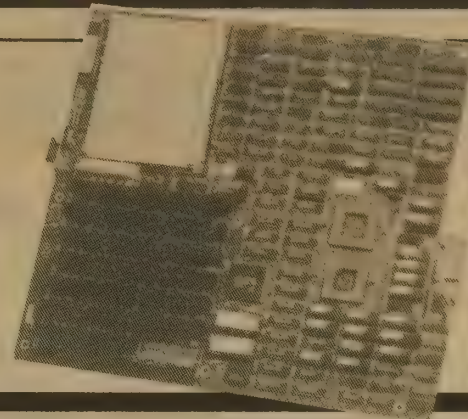


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- TTL CACHE CONTROLLER
- 64K CACHE SRAM
- DRAM: 256K, 1 MB, 4 MB (HYBRID)
- 16-BIT, ONE 8 BIT SLOT
- STANDARD AT SIZE



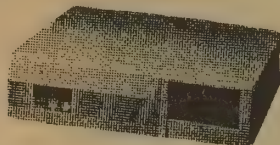
#### IW-H103 (AT CASE)

- AT, BABY AT MAIN BOARD
- 5 X 5.25" HALF HEIGHT
- 16.73" X 21.02" X 6.18"
- AT "L" TYPE POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/25.0 LBS.
- MEET FCC REQUIREMENT



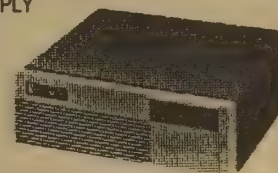
#### IW-A107 (AT CASE)

- AT, BABY AT MAIN BOARD
- 5 X 5.25" HALF HEIGHT
- 16.73" X 21.5" X 6.26"
- AT POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/26.0 LBS.
- MEET FCC REQUIREMENT



#### IW-D13 (BABY AT CASE)

- XT, BABY AT MAIN BOARD
- 5 X 5.25" HALF HEIGHT
- 16.73" X 19.72" X 6.18"
- XT POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/24.0 LBS
- MEET FCC REQUIREMENT



#### IW-B103 (BABY AT CASE)

- XT, BABY AT MAIN BOARD
- 3 X 5.25" FDD,
- 1 X 3.5" FDD,
- 1 X 3.5" HDD
- 16.75" X 16.73" X 6.18"
- PS/2 POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/20.0 LBS
- MEET FCC REQUIREMENT



#### IW-B570 (BABY AT CASE)

- BABY AT MAIN BOARD
- 3 X 3.5" FDD, 1 X 3.5" FDD,
- 1 X 3.5" HDD
- 16.73" X 17.4" X 6.26"
- BABY AT POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/22.0 LBS.
- MEET FCC REQUIREMENT



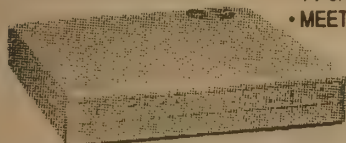
#### IW-BA77 (BABY AT CASE)

- AT, BABY AT MAIN BOARD
- 3 X 5.25" FDD,
- 1 X 3.5" FDD
- 1 X 3.5" HDD
- 16.53" X 14.26" X 6.68"
- PS/2 POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/20.0 LBS
- MEET FCC REQUIREMENT



#### IW-K101 (TERMINAL CASE)

- XT, BABY AT MAIN BOARD
- 1 X 3.5" FDD, OR
- 1 X 3.5" HDD
- 15" X 15.35" X 2.8"
- 70W SPECIAL DIMENSION POWER SUPPLY
- 3 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/15.0 LBS
- MEET FCC REQUIREMENT



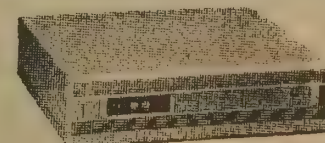
#### IW-E13 (SLIM CASE)

- XT, BABY AT MAIN BOARD
- 1 X 5.25" FDD,
- 1 X 3.5" FDD,
- 1 X 3.5" HDD
- 16.5" X 16" X 4.2"
- PS/2 POWER SUPPLY
- 5 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/16.0 LBS
- MEET FCC REQUIREMENT



#### IW-F13 (SLIM CASE)

- XT, BABY AT MAIN BOARD
- 2 X 3.5" FDD, 1 X 3.5" HDD
- 16.5" X 16" X 4.2"
- PS/2 POWER SUPPLY
- 5 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/16.0 LBS
- MEET FCC REQUIREMENT



#### IW-G13 (MINI TOWER CASE)

- XT, BABY AT MAIN BOARD
- 3 X 5.25" FDD,
- 1 X 3.5" FDD,
- 1 X 3.5" HDD
- 7" X 16.3" X 15.4"
- PS/2 POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/24.0 LBS.
- MEET FCC REQUIREMENT



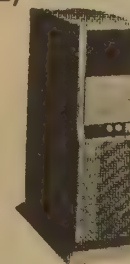
#### IW-Q103 (MIDI TOWER)

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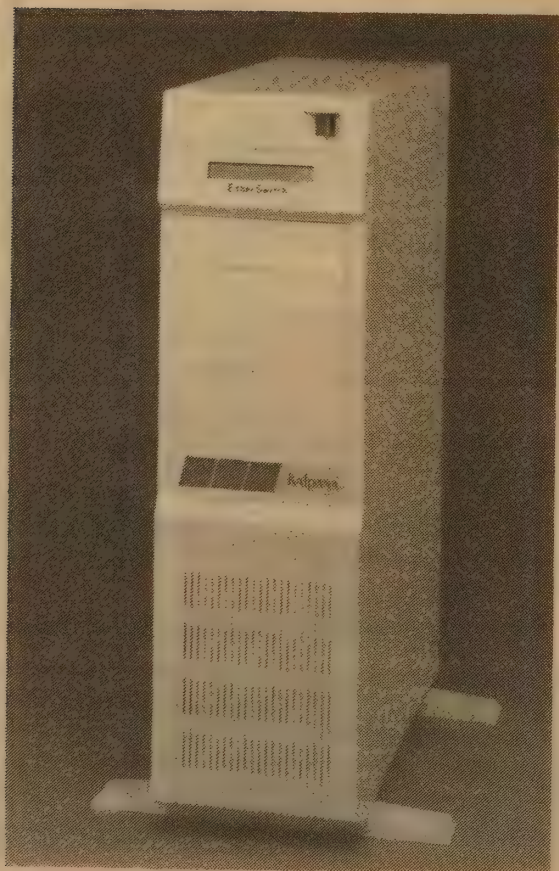
two kilometers. SynOptics Communications, Inc., 501 E. Middlefield Rd., Mountain View, CA 94043. (415)960-1100.

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Macintosh connects to the BridgePort through the LocalTalk/AppleTalk interface. PCs connect through the serial and parallel interface. Neither connection requires special software drivers. BridgePort offers a mixed environment connectivity solution for a variety of PostScript printers, including HP LaserJet, IBM LaserPrinter, QMS Turbo, Apple LaserWriter IINT and IINTX, and compatible printers. This standalone device has an Apple mini-DIN-8 connector, serial input and output connectors, and parallel inputs and output ports. (\$495) Extended Systems, Inc., 6123 N. Meeker Ave., Boise, ID 83704. (208)322-7575.



## FAST PACKET SWITCHING WITH ETHERSWITCH

EtherSwitch is a fast packet switching hardware platform by Kalpana, Inc. It can increase data throughput up to hundreds of times by using circuit switching on a per-packet basis. This method allows multiple simultaneous conversations to occur on any Ethernet LAN without incurring data packet collisions or propagation delays. The amount of throughput increase relates directly to the number of ports in the system. A ten-port EtherSwitch, for example, should allow five simultaneous conversations, resulting in a five-fold increase over Ethernet. EtherSwitch can accommodate up to seven network modules. (\$4995, for the two-port version, \$9995, for the full configuration) Kalpana, Inc., 550 Division St., Campbell, CA 95008. (408)378-3645.

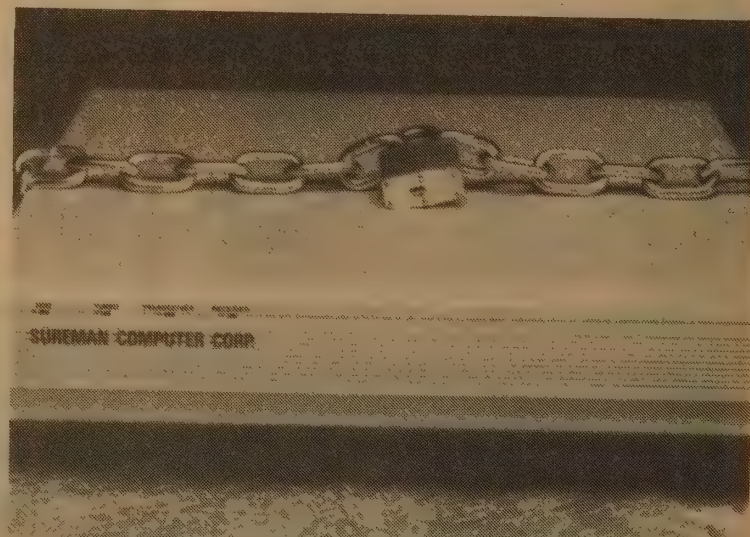


## DATAPoint SERVES DUAL 486s

The Datapoint 7850 is a 486-based network server using two 25MHz 486 CPUs and intelligent I/O adapters. Dual resource interface modules (RIMs) will enable the 7850 to serve as many as four separate, interconnecting ARCNET local area networks. This system will support up to 32Mb RAM, 2.4Gb of disk storage, and 2.2Gb of tape backup. The processing power of the 7850 is capable of supporting sixty-four simultaneous Oracle database users with sub-second response time. It comes packaged with Datapoint's comprehensive network operating environment, including disk mirroring, high-speed tape backup utilities, electronic mail, printer management, and other utilities and office management software. (Price for the dual-processor server with 16Mb RAM and support for two networks is \$29990) Datapoint Corp., 9725 Datapoint Dr., San Antonio, TX 78229. (512)494-7660.

## DISKLESS SUPERMAN LAN STATION

The Superman NS-2000 is a 386SX diskless workstation equipped with 2Mb RAM, expandable to 8Mb. Other features include serial,





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- Adjustable brightness control
- 80 X 25 character display
- 640 X 480 resolution at VGA mode
- 640 X 350 resolution at EGA mode
- 640 X 400 resolution at CGA mode
- 640 X 348 resolution at HGC mode
- Screen size: 7.75" X 5.75", 10" diagonal
- Adjustable viewing angle
- External VGA/EGA/CGA/HGC standard port, runs external monitor concurrently

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### System configuration:

- 12 MHz zero-wait state motherboard
- 5 expansion slots available
- Detachable 86-key keyboard w/12 function keys
- Built-in hardware configuration setup program
- 1 MB installed (expandable to 4 MB on board)
- EMS (L.I.M. 4.0) feature built-in on motherboard
- Floppy & hard disk controller
- TEAC 1.2 MB, 5.25" floppy drive
- Total one 3.5" & two 5.25" drive bay available
- One parallel port & one RS-232 serial port
- Intel 80287 math co-processor socket ready
- Landmark® Speed Index: 16; Norton® SI: 13.7
- Support DOS®, OS/2®, Xenix®, Unix®, Novell®
- 110/220V AC auto-switching; 180W power supply

### Weight & Dimension:

- Approximately 22 lbs (with 1 floppy drive)
- 16.1" (W) X 9.1" (H) X 7.5" (D)

### Case Features & Accessories

- Reset button, FD/HD & power LED indicators
- Durable carrying case w/ adjustable strap



## VGA PLUS PLASMA 286-12

- 640x480 Gas Plasma
- Simulation 256 color
- VGA and downward compatible
- 10.5" VGA monitor adapter
- 100:1 contrast ratio

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## EGA Plasma 286-12 Portable

### Display:

- EGA/CGA/HGC/MDA display modes
- 640 X 350, 16 colors on external EGA monitor
- 640 X 350 resolution, 4 gray scales plasma display

**All other specifications are same as VGA model.**

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- 20 MB hard disk ..... 195
- 30 MB hard disk ..... 225
- 40 MB hard disk 22ms ..... 295
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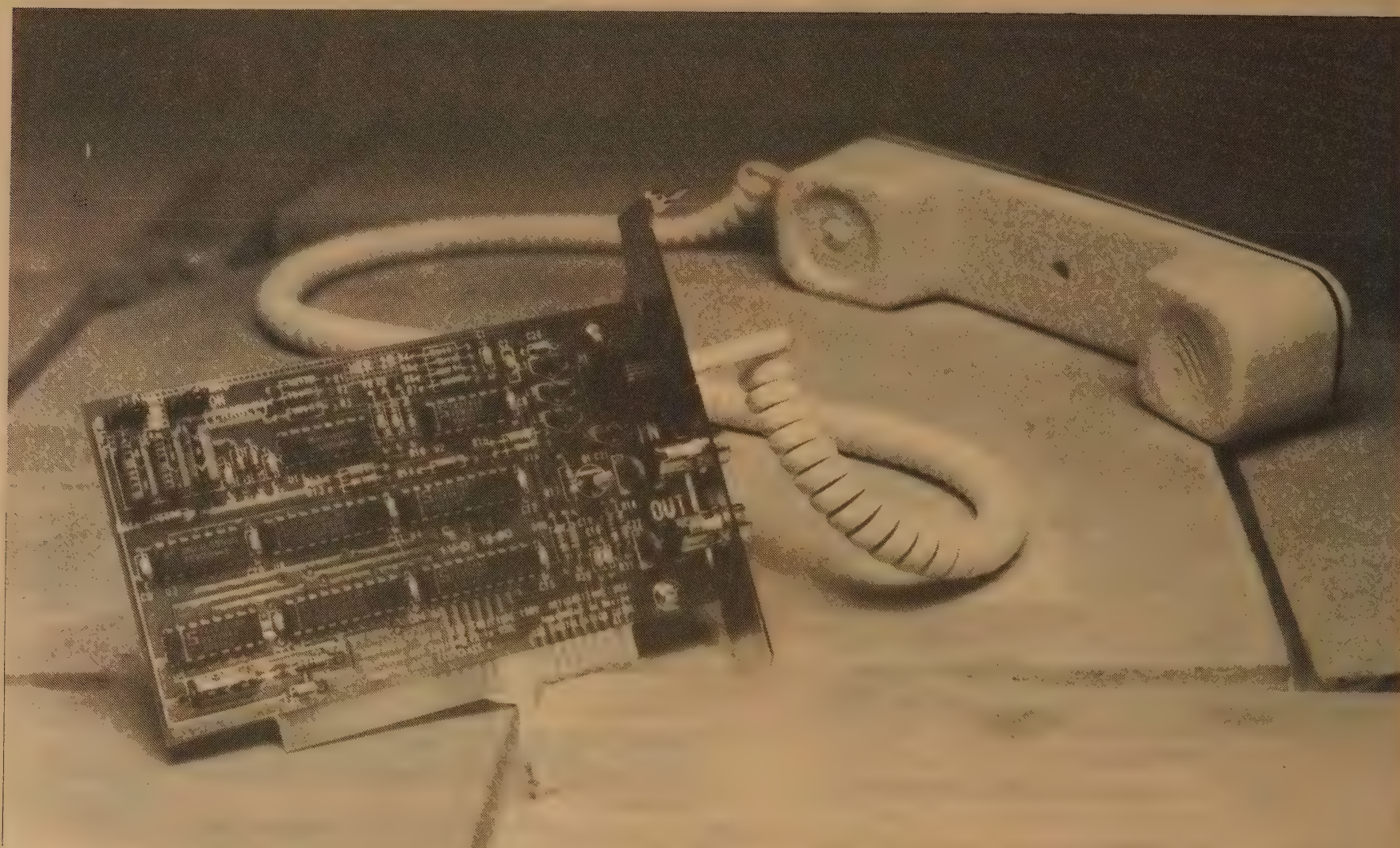
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parallel and PS/2 bus mouse ports along with a 1024 x 768 color VGA card. The network interface is provided through 10Mb/second Ethernet cards with Novell NetWare boot ROM. If a user decides to add a disk drive at a later date, a fan switch is provided attached to the 100W switching power supply. (\$1995) Superman Computer Corp., 20270 Carrey Rd., Walnut, CA 91789. (714)594-5880.

## TRANSPARENT CONNECTIONS

3+Open Connection for NetWare allows LAN Manager and Novell NetWare systems to operate as a single network, giving DOS users access to files and applications in both environments. With 3+Open, applications written to Novell's IPX protocol will run without alteration in a typical NetWare environment. In addition, NetWare users,

through 3Com's Demand Protocol Architecture (DPA), have access to a long list of 3Com LAN Manager applications. DPA also gives PC workstation users access to industry-standard network transport protocols and allows loading/unloading of protocols without rebooting or using gateways or bridges. (\$250 for a single-

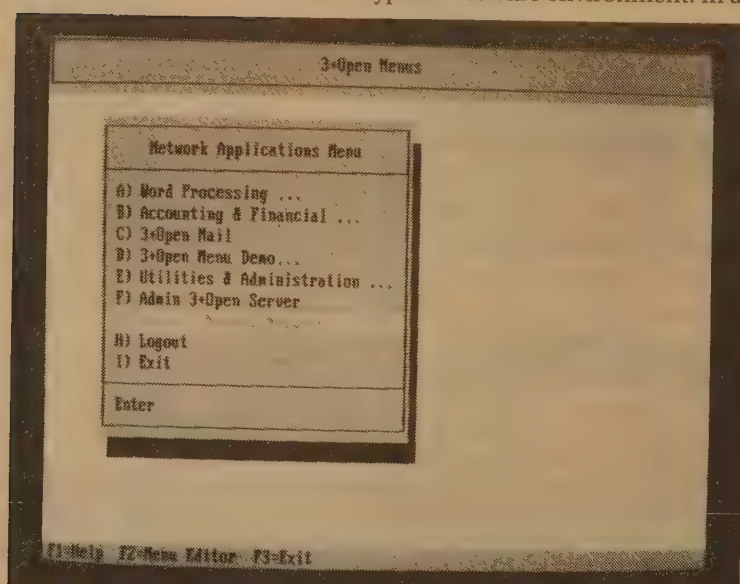
user license, \$995 for a ten-user license, \$2195 for a server license) 3Com Corp., 5400 Bay Front Pl., Santa Clara, CA 95052. (408)562-6508.

## ARTISOFT LAN'S VOICE SUPPORT

Version 3.0 of the LANtastic Network Operating System supports voice chat and voice mail when its Voice Adapters are installed on each PC. With v3.0 and the voice adapter, sold separately, users can pick up the telephone handset and talk with or leave messages for others on the network. Artisoft provides a textual chat option, pop-up messaging that informs the user whenever someone wants to textually or verbally chat or when a voice message is waiting, a disk cache, an easier menu-driven installation, support for diskless workstations, printing speed improvements and context sensitive help. Each \$149 IBM-compatible LANtastic Voice Adapter includes a telephone handset and cord that connects it to the adapter. Version 3.0 upgrades are \$50. Artisoft, Inc., 575 E. River Rd., Tuscon, AZ 85704. (602)293-6363.

## THE WYSE DECISION

The Wyse Decision 486/33E is a powerful Intel i486-based tower combining innovative design with advanced Wyse technology. Its advanced features include a 64-bit asynchronous system bus and Wyse EISA turbo ESDI disk controller. The separate system bus cache directory tags eliminate the need for the central processor to stop during portions of data transfer from the hard disk. Decision 486/33E comes standard with 2Mb RAM, capable of accepting two memory cards with up to 96Mb each for a total of 192Mb RAM. (Prices range from \$8999 for a single 5.25" 1.2Mb or 3.5" 1.44Mb disk system to \$13399 for a 660Mb ESDI hard disk system) Wyse Technology, Inc., 3471 N. First St., San Jose, CA 95134. (408)473-1200. ■





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w/40 MB HARD DISK

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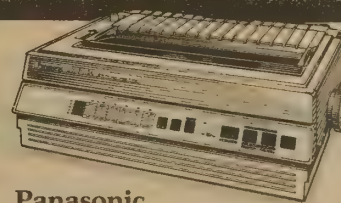
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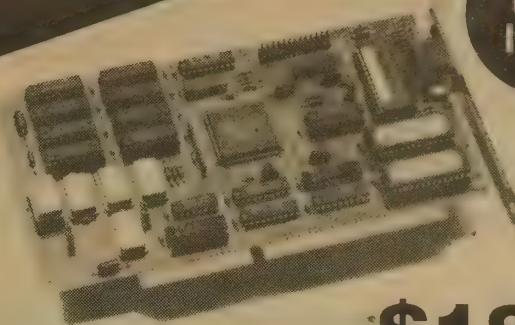
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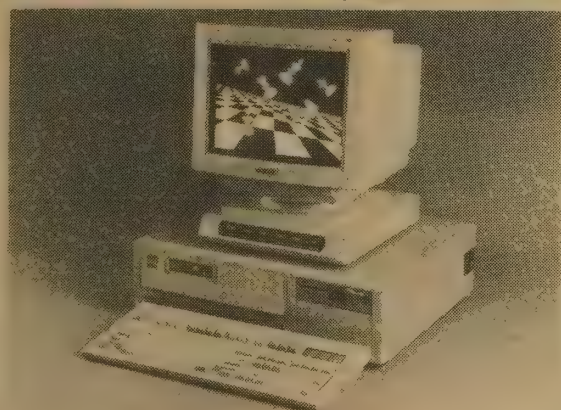
\*A. 80x25 Text  
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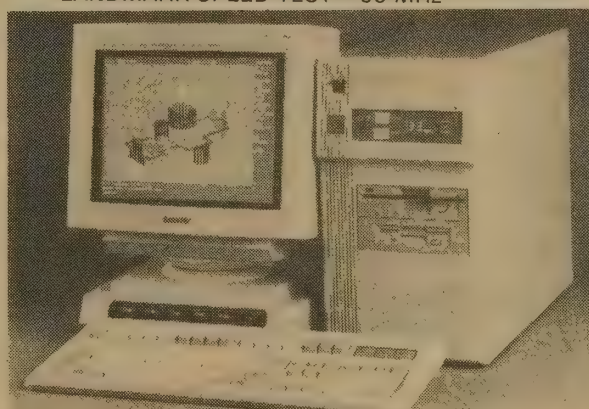


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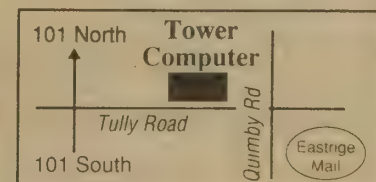
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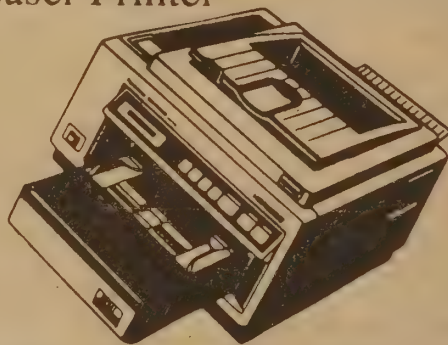
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|                                    | No<br>Mtr/Card<br>Included | 12"<br>Mono<br>720x348 | 14"<br>Mono<br>720x348 | 14"<br>VGA Mono<br>640x480 | 14"<br>VGA Color<br>640x480 | 14"<br>SuperVGA<br>1024x768 | 14"<br>EGA<br>640x350 |
|------------------------------------|----------------------------|------------------------|------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------|
| <b>AX12286 (286/12, 512K)</b>      |                            |                        |                        |                            |                             |                             |                       |
| Basic System, Desktop              | \$399                      | \$489                  | \$539                  | \$639                      | \$789                       | \$849                       | \$749                 |
| w/ 40 MB                           | \$699                      | \$789                  | \$839                  | \$939                      | \$1,089                     | \$1,149                     | \$1,049               |
| w/ 80 MB                           | \$949                      | \$1,039                | \$1,089                | \$1,189                    | \$1,339                     | \$1,399                     | \$1,299               |
| <b>AX16286 (286/16)</b>            |                            |                        |                        |                            |                             |                             |                       |
| Basic System, Mini Vertical        | \$499                      | \$589                  | \$639                  | \$739                      | \$889                       | \$949                       | \$849                 |
| w/ 40 MB                           | \$799                      | \$889                  | \$939                  | \$1,039                    | \$1,189                     | \$1,249                     | \$1,149               |
| w/ 65 MB                           | \$899                      | \$989                  | \$1,039                | \$1,139                    | \$1,289                     | \$1,349                     | \$1,249               |
| w/ 80 MB                           | \$1,049                    | \$1,139                | \$1,189                | \$1,289                    | \$1,439                     | \$1,499                     | \$1,399               |
| <b>SX16386 (386SX/16)</b>          |                            |                        |                        |                            |                             |                             |                       |
| Basic System, Desktop              | \$649                      | \$739                  | \$789                  | \$889                      | \$1,039                     | \$1,099                     | \$999                 |
| w/ 40 MB                           | \$949                      | \$1,039                | \$1,089                | \$1,189                    | \$1,339                     | \$1,399                     | \$1,299               |
| w/ 65 MB                           | \$1,049                    | \$1,139                | \$1,189                | \$1,289                    | \$1,439                     | \$1,499                     | \$1,399               |
| w/ 80 MB                           | \$1,199                    | \$1,289                | \$1,339                | \$1,439                    | \$1,589                     | \$1,649                     | \$1,549               |
| <b>SX20386 (386SX/20)</b>          |                            |                        |                        |                            |                             |                             |                       |
| Basic System, Desktop              | \$749                      | \$839                  | \$889                  | \$989                      | \$1,139                     | \$1,199                     | \$1,099               |
| w/ 40 MB                           | \$1,049                    | \$1,139                | \$1,189                | \$1,289                    | \$1,439                     | \$1,499                     | \$1,399               |
| w/ 65 MB                           | \$1,149                    | \$1,239                | \$1,289                | \$1,389                    | \$1,539                     | \$1,599                     | \$1,499               |
| w/ 80 MB                           | \$1,299                    | \$1,389                | \$1,439                | \$1,539                    | \$1,689                     | \$1,749                     | \$1,649               |
| <b>AX25386 (386/25)</b>            |                            |                        |                        |                            |                             |                             |                       |
| Basic System, Mini Vertical        | \$999                      | \$1,089                | \$1,139                | \$1,239                    | \$1,389                     | \$1,449                     | \$1,349               |
| w/ 40 MB                           | \$1,299                    | \$1,389                | \$1,439                | \$1,539                    | \$1,689                     | \$1,749                     | \$1,649               |
| w/ 65 MB                           | \$1,399                    | \$1,489                | \$1,539                | \$1,639                    | \$1,789                     | \$1,849                     | \$1,749               |
| w/ 80 MB                           | \$1,549                    | \$1,639                | \$1,689                | \$1,789                    | \$1,939                     | \$1,999                     | \$1,899               |
| <b>CX25386 (386/25, 32K cache)</b> |                            |                        |                        |                            |                             |                             |                       |
| Basic System, Med Vertical         | \$1,199                    | \$1,289                | \$1,339                | \$1,439                    | \$1,589                     | \$1,649                     | \$1,549               |
| w/ 65 MB                           | \$1,599                    | \$1,689                | \$1,739                | \$1,839                    | \$1,989                     | \$2,049                     | \$1,949               |
| w/ 80 MB                           | \$1,749                    | \$1,839                | \$1,889                | \$1,989                    | \$2,139                     | \$2,199                     | \$2,099               |
| w/ 100 MB                          | \$1,849                    | \$1,939                | \$1,989                | \$2,089                    | \$2,239                     | \$2,299                     | \$2,199               |
| <b>CX33386 (386/33, 64K cache)</b> |                            |                        |                        |                            |                             |                             |                       |
| Basic System, Full Vertical        | \$1,399                    | \$1,489                | \$1,539                | \$1,639                    | \$1,789                     | \$1,849                     | \$1,749               |
| w/ 65 MB                           | \$1,799                    | \$1,889                | \$1,939                | \$2,039                    | \$2,189                     | \$2,249                     | \$2,149               |
| w/ 80 MB                           | \$1,949                    | \$2,039                | \$2,089                | \$2,189                    | \$2,339                     | \$2,399                     | \$2,299               |
| w/ 100 MB                          | \$2,049                    | \$2,139                | \$2,189                | \$2,289                    | \$2,439                     | \$2,499                     | \$2,399               |
| <b>CX25486 (486/25)</b>            |                            |                        |                        |                            |                             |                             |                       |
| Basic System, Full Vertical        | \$3,199                    | \$3,289                | \$3,339                | \$3,439                    | \$3,589                     | \$3,649                     | \$3,549               |
| w/ 80 MB                           | \$3,749                    | \$3,839                | \$3,889                | \$3,989                    | \$4,139                     | \$4,199                     | \$4,099               |
| w/ 100 MB                          | \$3,849                    | \$3,939                | \$3,989                | \$4,089                    | \$4,239                     | \$4,299                     | \$4,199               |
| w/ 200 MB                          | \$4,099                    | \$4,189                | \$4,239                | \$4,339                    | \$4,489                     | \$4,549                     | \$4,449               |

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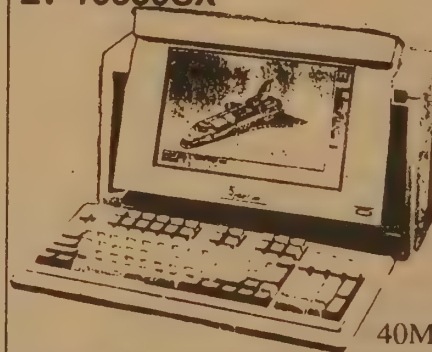
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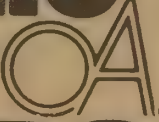
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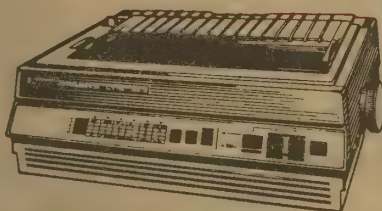
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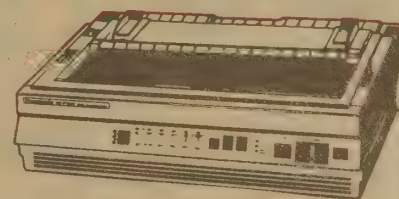


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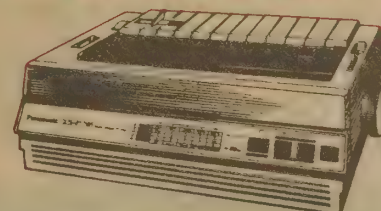
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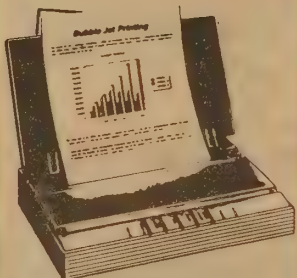


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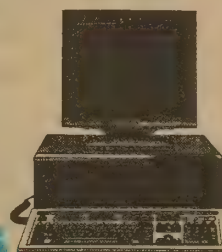
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## Showbiz With St. Steve

### Sticking His NeXT Out

BY DAVID  
MORGENSTERN

**S**aint Steve put on his holy road show again in September with the introduction of the latest NeXT computer models. Any time Steve Jobs hits the stage, the charismatic Dream-of-the-Computerized-Future radiates from him, infecting everyone in hearing range. Mass hypnosis? The 21st Century Svengali? Some BMUGers talked about "smoke and mirrors" when describing the show.

Steve started the show in Davies Symphony Hall, scene of the first NeXT introduction, by confessing the Four Deadly Sins of the original cube: too slow, too expensive, no applications, and no color. He also admitted that users had spent the first year beta testing the NeXT operating system. These problems and more were addressed with the rollout of four new products:

- NeXTstation, the new entry-level machine, \$4,995 list, is a flat box, only 2.5" tall. Box designers call this style "slim case," or slab design.
- NeXTstation Color, \$7,995 list, a 16-bit, PostScript color version of NeXTstation. It will sport a 16" color monitor.

### BMUG

- NeXTcube, \$7,995, is the new version of the original black cube.

- NeXTdimension, \$3,995 list, is a high-end, 32-bit PostScript color board for the cube. This card uses a 64-bit RISC-based microprocessor running at 33MHz to really give it punch. Everyone who processes images said this card made them drool.

All of the machines feature a 15 MIPS Motorola 68040 CPU, multimedia electronic mail system, digital signal processing chip, Display PostScript, an internal 2.88Mb floppy disk drive, and 105Mb hard disk drive. The painfully slow optical drives that came in the original NeXT cubes are "optional" in the new models. Pick up a bargain at the NeXT swap meet.

BMUG technical hounds were very impressed with the hardware. Their feeling was that NeXT has really done things right this time. The demonstration of real-time video caught the eyes of BMUG multimedia nuts and illustrators. The NeXTstation is ten times faster than a Mac IIci, and it showed.

The NeXT computer is not a computer for everyone. It combines the power of a minicomputer workstation with a usable human scale interface. Over and over Steve kept repeating the phrase, "for mere mortals," as if repetition might make it so. The NeXT requires a more sophisticated user than the Mac, but less so than someone that snuggles up to a Sun computer.

Jobs's vision of computing has always been strong and personal. In the Mac, he implemented a graphic user interface that revolutionized computing—it gave the power to the users. He forced software producers to follow his lead, instead of allowing them the easier road of chaos. The publishing and evangelizing of the Macintosh Human Interface Guidelines have lead to the Mac's success.

Jobs's NeXT vision is of a computer for communication—combining sound, video, and data in a single integrated work environment. You don't need to add much to the NeXT—it's all there ready to go. One BMUGer described it as "a lovely custom-built automobile."

In the NeXT, Jobs gives the power to the application developer,

instead of the everyday user. The NeXT gives programmers a hardware platform with a big box of toys to play with, and the software tools to get things done without killing themselves. Parts of the MicroPhone NeXT developmental version shown at the "Product Showcase" were completed in a few days. This might have taken three weeks on the Macintosh. However, most of the software publishers at the show were showing alpha, or prototype programs, that will ship in the unidentified future. NeXT hopes they will be out the door soon—they had better be.

Problems remain for NeXT—who's going to buy the machine, and where will they buy it? No one from Businessland was identified (or wanted to be identified) at the rollout. Steve dodged the marketing questions at the press conference. They intend to "expand aggressively" with integrators, resellers, and direct sales force. He claimed to have fifteen thousand firm orders for the new machines, which drew a cheer from the home crowd.

Two years have released a little hubris, and Steve wasn't riding quite as high as he was at the 1988 NeXT premiere. A BMUGer commented that there was the atmosphere of Butch Cassidy and the Sundance Kid preparing to jump off the cliff—they'll either hit the water and swim, or be dashed to pieces on the rocks below.

### A BIRD IN THE NEXT

Jim Manzi, president and CEO of Lotus, was a big hit at the show. Lotus's new product is a new spreadsheet (what a surprise) called Improv. He came out with some outrageous lines.

He started by asking three "religious" questions: "Why on the NeXT? Why a

What do the  
NeXT machines  
mean to Apple?  
Apple is in the  
same place as  
IBM was in  
1984—no one  
will get fired for  
buying a  
Macintosh in  
today's market.  
It's a daring  
move to go  
"non-standard"  
with the NeXT  
best thing.



Copyright © 1990 by David Morgenstern. All rights reserved worldwide. David Morgenstern is a Bay Area "MacNurturer" and BMUG member. David is DMORGENSTERN on MacNET, 72030, 1607 on CompuServe, and himself at (415)549-BMUG.



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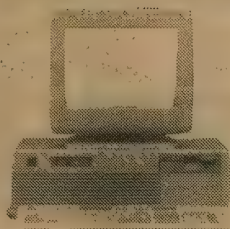
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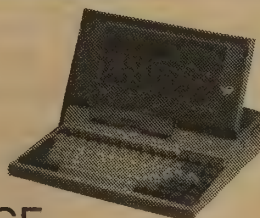
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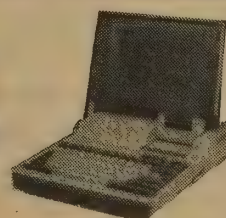
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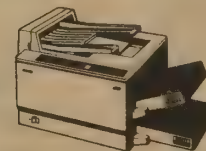
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# CREATIVE TOOLS

• Here's this month's top ten list from Scott Kronick, programmer and author:

*The Top Ten F.B.I. Misconceptions About Computers*

10. The difference between RAM and ROM is that RAM has two X chromosomes and ROM has an X and a Y.

9. Loss of revenues from piracy of Microsoft products has forced Bill Gates to postpone Mom's dental work.

8. Agents infiltrating the Hackers Conference blew cover by assuming Super Mario Brothers were Mafia hitmen.

7. They believed Sculley's claim that theft of Mac source code leaves Pepsi formula as USA's sole technological edge.

6. The late J. Edgar Hoover initiated obscenity charges when he first heard a company was calling itself WANG.

5. Apple's Board of Directors includes members who know how to program a computer.

4. They are nearly certain that nuPrometheus suspect is also responsible for *Twin Peaks*' killing of Laura Palmer.

3. The Devil has contracted with John Draper to computerize Hell. [John Draper is the notorious Captain Crunch. Also a BMUG regular.]

2. They tried to help BMUG's Clifford Stoll track down a German INTERNET spy by posting an agent at a local Hof-Brau.

1. When hackers share, it's theft; when company employees share, it's networking.

new spreadsheet? And does Bill Gates really exist? Because of time limitations, I will not be able to address the third question." H. Ross Perot, the oil tycoon, NeXT investor, and one of the few attendees over 50 in the audience, put his head in his hands when heard that, wondering what he had done to be stuck in the company with such naughty boys!

Manzi continued, "Why? Because God wanted us to," as he looked over at Jobs.

Later he said that his secret ambition for the last ten years had been to make a presentation with Steve Jobs. "I feel like John the Baptist, I have to confess." This went over like cake to ducks with the two thousand persons filling the auditorium. It was preaching to the converted, since BMUGers estimated that over a quarter of the crowd were NeXT employees and groupies.

What do the NeXT machines mean to Apple? That's hard to tell. Apple doesn't have to build a NeXT machine, but they have to give users and developers enough technology to keep them satisfied. Apple is in the same place as IBM was in 1984—no

feit Macintosh computer chips.

"Dennis Wayne Hayes, 48 years old, entered a guilty plea in US District Court to charges of money laundering, criminal infringement of a copyright, and structuring a financial transaction.

"According to testimony by the Internal Revenue Service investigating agent, Hayes sold approximately 5,000 sets of counterfeit Macintosh 128K ROM computer chips between 1988 and 1990, resulting in gross receipts of approximately half a million dollars.

"To counterfeit the computer chips, Hayes purchased blank chips and removed the manufacturer's name. He then had the chips silk screened with the Apple logo, copyright information and parts numbers to make them appear genuine. Macintosh 128K ROM information was copied on the chips, which he sold for \$95-130 per set. Apple Computer does not authorize reproduction of this copyrighted material."

How long did this guy think he was going to keep ahead of the law? Did he really think that Apple wouldn't care about thousands of fake ROMs stuck in competitors' boxes? Apple has never cared enough to find out who owns Macs, and what they do with them, but it didn't take advanced mathematics to see that counterfeiters were busy burning ROMs. It would have taken a plague to junk enough Macs to equal the numbers needed by emulator users.

## WHAT IS BMUG?

BMUG is an educational non-profit consumer advocacy group organized to share information, and provide critical direction to users and developers in the computer community worldwide.

Like any growing organization, it is many different things to its ten thousand international members. BMUG supports many Special Interest Groups (SIGs), an eight-line Bulletin Board System (BBS), a free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6-9 (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG HelpLine, (415)849-HELP, and our fax number, (415)849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am- 5 pm). If your question can't be answered on the spot, we try to get you in touch with someone that can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around with 500+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM™ Version II*, our library and more on CD-ROM.

Our BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are as well as send mail to users everywhere! BMUG is now a part of the international USENET network (apple!bmug!user.name@sun.com) or (user.name@-BMUG.FIDONET.ORG). With our multi-line capability you are now able to have access to BMUG almost 24 hours a day. It's easy to use, fun, and a great resource.

To get some further information about BMUG, please write to: BMUG, 1442A Walnut St. #62, Berkeley, CA 94709. If you prefer to phone our business office, call (415)549-BMUG, or Fax (415)849-9026.

one will get fired for buying a Macintosh in today's market. It's a daring move to go "non-standard" with the NeXT best thing.

Hopefully Apple will get off its research and development behind, and juice up its high end products. The trickle-down theory seems to work in computers. Features in the cutting edge machines make their way downstream to the cheaper mass-market boxes. Let's start a wish list. And a price list!

The Mac is still easier to support than anything else on the market, including Windows. Some wise managers and single users know that the hardware purchase is just the beginning of a digital relationship. The cost of a machine and software is dwarfed by the costs of training, support, and downtime, computer-related unproductivity. We'll see how long the Macintosh can continue to hold that lead, with its scattered play-it-safe leadership.

## AS THE ROM IS WRITTEN

A couple of months ago I told you about the new Mac viruses that affect Atari computers. They concerned the use of Macintosh emulators for the Atari machines. The emulators are hardware and software combinations that require 128K Macintosh ROMs, which users must buy separately. Some local stores sell used Mac Plus ROMs, and also illegally copied chips.

In late September the following information was released by the US Department of Justice in Cincinnati, Ohio: "United States Attorney announced that a Cincinnati computer entrepreneur pled guilty to charges involving the world-wide sales and distribution of counter-



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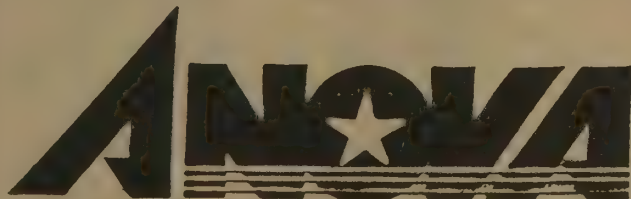
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Perhaps he was going to branch out into something a little more lucrative—subcontracting drug running for the CIA. In the raid on Hayes's house, the agents seized over \$180,000 in cash, \$2,000 in traveler's checks, various semi-automatic weapons, and a small Piper airplane. It's an Iran-Contra starter kit!

## BYTES AND BITES

I seem to be the only computer person that caught this strange item in *Entertainment Weekly*. Get ready for a new level of user-friendly computing in the television series, *The New Lassie*. Lassie, a dog, will use a computer!

Lassie pushes the mouse around with her nose to make selections. The show was written by dBASE authority Tom Rettig, who appeared in the first Lassie TV series in the States. He claimed, "It's a pretty plausible script. I mean, we don't have Lassie working with any complicated software or anything." You mean that Lassie can't handle a flat file database?

This is a whole new market for software publishers—dog productivity programs. Lassie might want to keep track of fire plugs and bushes in the neighborhood. She might want to run a spreadsheet to see if her agent was dipping into her savings. There's lots of opportunities for adventurous startup companies here. Bow-wow.

HyperCard 2.0 is available now from

## BMUG CALENDAR

- 11/8 Noetic Systems Inc. Ergo (expert systems); Paracomp Swivel 3D and Model Shop
- 11/15 Casady & Greene, Skyshadow (games); New Bridge Microsystems NEWLIFE upgrades and accelerators
- 11/22 Thanksgiving holiday—no meeting
- 11/28 BMUG West meeting, SF Exploratorium. Adobe Illustrator 3.0; DigiDesign AudioMedia; Guy Kawasaki
- 11/29 Qume printers; Globa Village Communication Teleport (modem)
- 12/6 Group Technologies Aspects; Ventura Software Ventura Publisher
- 12/13 Finals. Meeting canceled
- 12/19 BMUG West meeting, SF Exploratorium. Quark XPress 3.0; SuperMac multimedia products
- 12/20 Shopping holiday. Meeting canceled



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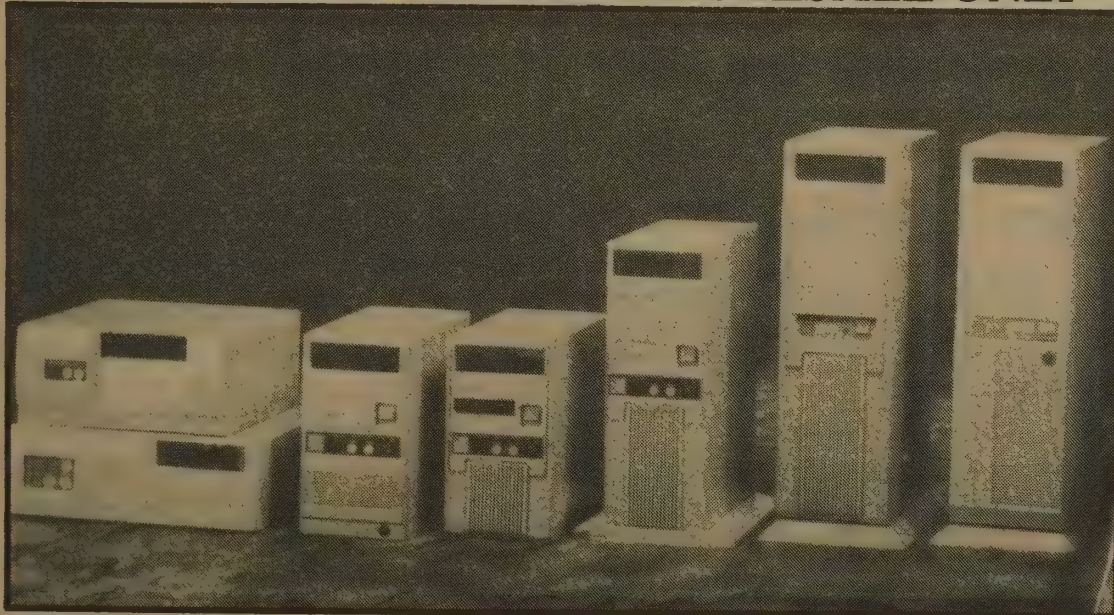
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- \* Up to 6 pages per minute

# \$2495

### Qume VGA and Wise Graphic Card

The QM835 is a 14" analog color monitor with resolution up to 1024X768

- \* Non-glare etched screen
- \* Fine .28mm dot pitch
- \* DB-15 analog input

# \$395

The Wise VGA is Super VGA graphic Card with 1024X768, 256 color (1MB).

- \* Compatible with IBM VGA
- \* Driver for Window 3.0, Pcad Autocad, Lotus, Symphony Framework, Ventura, etc..
- \* Trident Chipset

# \$195

### Sigma Design VGA LEGEND

- High performance 16 bit interface and 16 bit BIOS
- Up to 1024X768, 256 color
- No switch to set on the adapter
- Wide range of drivers
- Pixel Frequency up to 65 MHz
- Vertical refresh rate up to 85 Hz
- Horizontal Sync 31.5 to 49 KHz
- Add \$50.00 for 1Mb Upgrade

# \$275

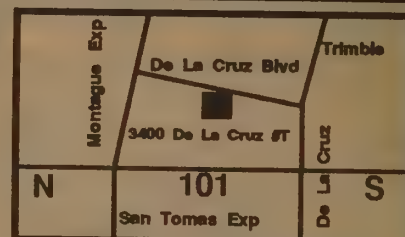
### Number Nine Graphics Xccelerator

- TI 34010, 60MHz graphic processor
- 1024x768N (Max, 1280x1024)
- Built-in MDA, VGA pass-thru
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- Lowest TI 34010 based board

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M-F: 9-7PM Sat 10-4PM



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# HARDWARE

## BUYERS GUIDE

### HERCULES GRAPHIC STATION & ART DEPT.

#### Graphic Station

The one of the best graphic card.  
Monochrome to VGA(1024X768), 2 to  
**16.7 million colors** for photographic quality.

- 100% IBM VGA Compatible
- T.I. 34010 **Graphic Processor** at 60 MHz
- 1MB VRAM**, 2MB optional program memory
- Up to **5 times faster** for AutoCad & Window
- Up to **1024X768, 256** colors at interlaced or non interlaced mode
- 2 Years** parts and labor warranty

Authorized Dealer

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#### Art Dept.

The Hercules Graphic Station Card and **LUMENA/Hercules** software provides the most exciting tools for advertising and design agencies, corporate art departments and other visual artists.

With Hercules Art Dept., **logos, ads** and **literature** or **packaging comps** can be rendered in hundreds of different styles, colors and layouts.

And then output to color printers, slides and transparencies or to color separatings.

Come & See Our DEMO

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### Desktop Publishing

#### Publish all !

We carry full line of Sigma Design Products, from 768X1024 to 1664X1200 resolution, 15 to 21 inch, 80X66 to 180X43 text mode, up to 256 Gray shades, and much more.

Sigma Design product comes with software driver for GEM, Lotus 1-2-3, Symphony, Pagemaker, Ventura Publisher, Microsoft Windows, Word, Wordperfect, AutoCad, and other application software.

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-19" L-View **\$1895**

\*1664X1200(120dpi) Res.

\*Non-interlaced Paper White

\*View legible two page spreads

-21" SilverView **\$1595**

\*72dpi Res.(1152X870)

\*73 Hz Refresh Rate, Paper White

\*Hercules and MDA Emulation

-21" SilverViewGS **\$1895**

\*256 Gray Shades

\*1152X870 (72dpi) Res.

\*TMS3410 Graphics Coprocessor

-15" PageView **\$895**

\*View a full legible page

\*High resolution 768X1024

\*Flat Screen, Dark Glass

-Sage 1280 **Call**

\*TMS34010 graphics controller

\*1280X1024 resolution, 256 color

\*VGA pass-through, DOS & UNIX V

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We know desktop publishing.*

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### Monitor / Graphic Card

#### Monitor

##### MITSUBISHI

-HL6615TK, 16", VGA to 1280X1024N **1145**

-HL6905TK, 20", VGA to 1280X1024N **1999**

##### HITACHI

-CM2085, 20", VGA to 1280X1024N **1949**

-HM4319D, 20", VGA to 1280X1024N **1995**

-HM4119DDL, 20", 1024X768N **2199**

-HM4119DAA, 20", 1280X1024N **2299**

##### NEC

-NEC 4D, 16" VGA to 1024X768N **1199**

-NEC 5D, 20" VGA to 1280X1024N **2295**

##### PHILIPS

-C1764, 17" VGA to 1280X1024N (Flat) **1499**

-C2064, 20" VGA to 1280X1024N **2095**

##### NANAO

-9070S, 16", 20-50KHz 1024X768N **979**

-9400, 20", VGA to 1280X1024 **2615**

#### Graphic Card

##### CONTROL Systems

-XJ10, 1024X768N or 1024X1024I **1695**

-XJ12, 1280X1024N or 1024X1024N **1999**

##### METHEUS

-UGA1104, 1024X768, 48.8KHz **895**

-UGA1224, 1280X1024, 64KHz **1295**

##### NEC Graphics Engine

-MGE AT/16, 1024X768N, 16 Color **695**

-MGE AT/256, 1024X678N, 256 Color **995**

##### Sota Technology

-340i, 1024X768N, 16 Color **695**

##### RENAISSANCE GRX

-Rendition II/16, 1024X768N **995**

-Rendition II/256, 1024X768N **1395**

##### HERCULES GRAPHIC STATION

-1024X768, 256 Color **795**

##### HP GRAPHICS CARD

-IGC10, 1024X768, TI 34010 **850**

-IGC20, 1280X1024, TI 34020 **1995**

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*other Monitors & Graphic Cards*

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With **IMAGE-IT** from the Sigma Design, you can capture video signal from VCR or video camera and "digitizes" it for storage by your PC.

**IMAGE-IT** is a low cost, yet powerfull adaptor. Application for **IMAGE-IT** include **Desktop Publishing, Image Databases, Presentation Graphics** and **Computer Aided Instruction.**

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### Full Page Scanners

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-Model 730GS Flatbed Scanner **925**

-Model 830 Flatbed Scanner **1995**

#### MITSUBISHI

-Page Scanner with paper feed **745**

-Page Scanner with 16 grey **665**

#### MICROTEK LAB

-MSF-300G 300 dpi Gray **1495**

-MSF-300Z 16 mil Col, 256 Gray **1985**

-MSF-400GS 400 dpi Gray **2895**

### Plotter / Digitizer

#### Plotter

##### CALCOMP

-1023, A-D, 8 Pen **3495**

-1025, A-E, 8 Pen **4575**

-1044GT, A-E **8895**

##### HOUSTON Inst.

-DMP61, A-D **2999**

-DMP62, A-E **3999**

-Option for Multipen **469**

##### IOLINE

-3500, A-D, 1 Pen **2299**

-3700, A-E, Cut & Roll **2999**

-4000, A-E, 20 ips **3499**

#### HP Plotter

-HP7440A, A, 8pens **1095**

-HP7475A, A-B, 6 pens **1450**

-HP7550A, A-B, 8 pens **2995**

-HP7570A, C-D, 8 pens **2995**

-HP7575A, A-D, 8 pens **3695**

-HP7576A, A-E, 8 pens **4795**

-HP7595B, A-E, 8 pens **6695**

Come & See Demo for

CALCOMP, IOLINE Plotter

#### Digitizer

#### SUMMAGRAPHICS

-SummaSketch II 12x12 **369**

-SummaSketch II Pro **639**

#### KURTA

-12X12, Cur. & Stylus **389**

-12X17, Cur. & Stylus **649**

#### CALCOMP

-12X12, Cur. & Stylus **329**

-12X18, Cur. & Stylus **655**

-18X24, Cur. & Stylus **1325**

-24X36 (2300 Series) **1595**

-36X48 (2300 Series) **1795**

#### HP

-7060A, 11X11 S-Pro **485**



# CREATIVE TOOLS

**The NeXT computer is not a computer for everyone. Over and over Steve kept repeating the phrase, "for mere mortals," as if repetition might make it so. The NeXT requires a more sophisticated user than the Mac, but less so than someone that snuggles up to a Sun computer.**

BMUG. This isn't a lame run-time version, but the full five-disk set. We can only distribute this until December 31, 1990, so don't procrastinate. The set is a bargain—only \$15 (please add \$3 for shipping and handling). Call, or write the BMUG office.

## SHAREWARE SPOTLIGHT

Electronic publication as an alternative to hard copy is reflected in many stacks found in the BMUG software library. Some are just information vehicles, while others break ground in their construction, and in the way they were developed.

Last Earth Day a couple of supreme HyperCarders, Amanda Goodenough, the creator of the popular Inigo the Cat HyperCard-based children's stories, and Karen Rall, the author of a powerful HyperCard development environment, Wild Things, wondered if there was some way to extend their kids' involvement in environmental education. Their children had spent many hours of class, and home time, gathering facts and creating projects about pollution,

global warming, and other Earth Day issues.

Karen and Amanda decided to create a stack, Kids Can Save the Earth, that would share this knowledge and work with other kids and adults.

Over AppleLink they asked if schools, classes, and individuals would like to collaborate in the stack. Teachers and parents from around the US got involved sending text, pictures, and ideas for the project. Karen spent hours scanning paintings and drawings of the earth. She told me that one class's work had to be taken off of bulletin boards, scanned overnight, and then returned the next day for parents' visits to the school.

The stack centers on a card that shows the Earth and its major problems. The problem words will take you to the issue, or solutions. You can also jump to related stacks—water pollution will take you to a whale saving stack.

The project comes on six disks for \$15, and is available at the moment only through BMUG. Ask for HyperEducation 60 when ordering. ■

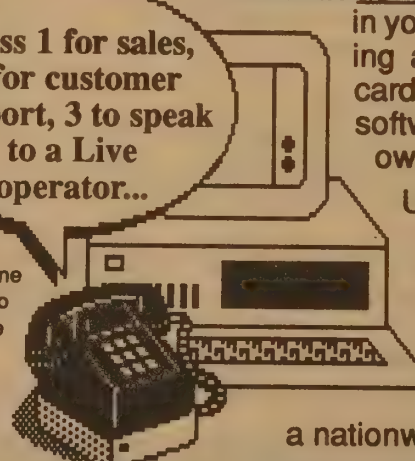
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  - ✓ **486 and Novell ELS Compatible**
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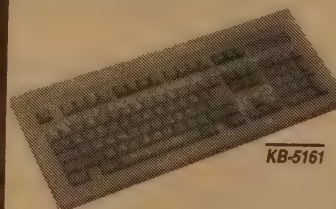
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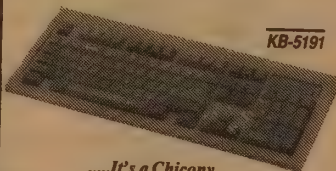
The Tool That Saves Time and Space.

- Features:**
- Mechanical tactile click 101 or 102-key enhanced keyboard built in tracking ball with 3 push buttons
  - PC/XT/AT/PS-2, 386 and NOVELL ELS Compatible
  - PC Mouse and Microsoft mouse Compatible
  - Standard D-9 or D-25 serial connector
  - Size: 19.2" x 7.7" (485mm x 195mm)
  - Packing: 6 pcs/carton
  - Weight: N.W-11kgs/carton, G.W-15kgs/carton
  - FCC ID: E8H5IKKB-5561



### Feel the Difference...

- Features:**
- PC/XT/AT/PS-2, 386 and NOVELL ELS Compatible
  - Advanced Arc-Profile design
  - Mechanical keyswitch with the choice of click tactile or silent tactile touch
  - Multiple language and 102-key European versions available
  - 3 clustered LED indicators
  - Size: 19.2" x 8.3" (490mm x 210mm)
  - Weight: N.W-12kgs/carton, G.W-15kgs/carton
  - FCC ID: E8H5IKKB-5161



### "Click" Touch, Advanced Electronics

- Features:**
- PC/XT/AT/PS-2, 386 and NOVELL ELS Compatible
  - A stream-lined design with a smaller footprint
  - High quality mechanical keyswitch with the choice of either click tactile or silent tactile touch
  - Multiple language and 102-key European versions available
  - Size: 18.8" x 8.8" (478mm x 174mm)
  - Packing: 10 pcs/carton
  - Weight: N.W-16kgs/carton, G.W-18kgs/carton
  - FCC ID: E8H5IKKB-5191

.....It's a Chicony.



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### 386-25 MHz

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Landmark Speed Test = 34

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### 386SX-16 MHz

386SX-16, 0 Wait State, Landmark = 21

**\$659**

### 286-12 MHz

286-12 MHz, 0 Wait State  
Landmark Speed Test = 16

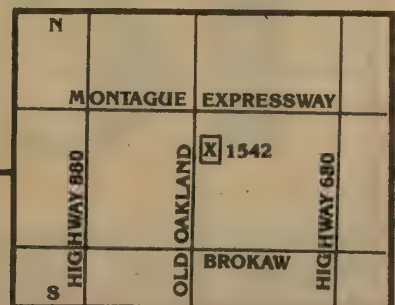
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# NEC PORTABLES

## ULTRALITE

Lightest, smallest, full function laptop computer; NEC V-30/10 MHz; 640K RAM; 1 MB or 2 MB silicon hard drive; EL backlit LCD/CGA; serial, parallel, modem, RJ-11, expansion bus; AC battery; 4.4 lbs



## PROSPEED 286

Most powerful 80286 laptop; 80C286/16 MHz, Up to 9 MB RAM; 1.44 MB 3.5" floppy disk; paper white backlit LCD/VGA; LTX™ memory, modem; serial, parallel, external FDD, RGB video, keyboard, RJ-11, modem; A/C battery

20 MB. .... **\$2895**

40 MB. .... **\$3195**

100 MB. .... **\$3695**

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Desktop quality that is portable; 80386/16 MHz; up to 8 MB RAM; 1.44, 3.5" floppy disk; paper white backlit LCD/VGA/EGA; LTX™ memory, modem; parallel, serial, modem, RJ-11, VGA monitor, docking station; optional A/C battery

40 MB. .... **\$3495**

100 MB. .... **\$4895**

## 80386 SX

16 MHz, 1 MB Memory Up to 9 MB, Monographic 640x480 VGA, 3.5" 720/1.44 MB Drive, Serial/Parallel

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First color display laptop computer. 80386SX/16 MHz CPU/clock speed; up to 4 MB RAM; 1.44 MB, 3.5" floppy disk; color LCD/VGA/EGA; parallel, serial, RGB, monitor, external FDD, modem

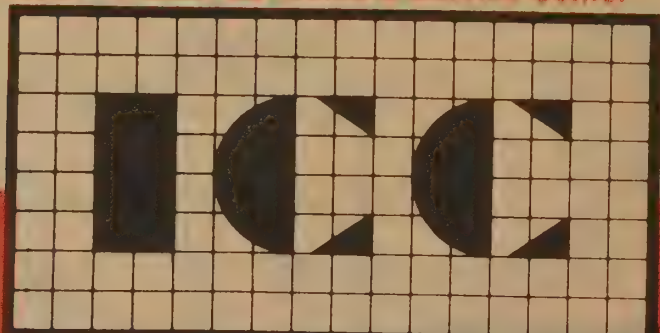
42 MB. .... **\$5295**

100 MB. .... **\$5895**



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## NEC PROSPEED SX/20

80386 20 MHz, 1.44 Drive, 1 MB Ram, 40 MB Hard Drive, Black or White VGA LCD, 12½ lbs.

**\$3895**



## MONITORS

NEC 2A 14" Super VGA (800x600) ..... **\$489**

NEC 3D 14" 1024x768 ..... **\$619**

NEC 4D 16" Super VGA ..... **\$1149**

NEC 5D 20" (800x600) 1024x768 Interlaced ..... **\$2249**

## PRINTERS

P960XL 24 wire dot matrix 400 cps printer parallel I/P, Epson/Diablo, 136 column width, color ..... **\$1099**

P5300 24 wire dot matrix printer parallel I/E, 115 VAC, 256 cps, 136 column width, color ..... **\$695**

LC 860 + 115V Silentwriter page printer, Adobe Postscript/HP LaserJet+ ..... **\$3239**

260 Silentwriter 2, PCL printer, 8 pg/min., 300 dots/in., 115V, 60 Hz, 1 MB memory ..... **\$1751**

## ACCESSORIES

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| Docking Station for 386 .....                     | <b>\$695</b>  | Battery Cartridge (standard) for ProSpeed 286 .....  | <b>\$147</b>  |
| 1.44MB 3.5" Floppy Disk Drive for UltraLite ..... | <b>\$295</b>  | Battery Slice (High Capacity) for ProSpeed 286 ..... | <b>\$295</b>  |
| 256KB Ram Card for UltraLite .....                | <b>\$249</b>  | 2400BPS Modem for ProSpeed 286 .....                 | <b>\$295</b>  |
| Black Leather Carrying Case for UltraLite .....   | <b>\$99</b>   | 2 MB Ram Card for ProSpeed 386 .....                 | <b>\$895</b>  |
| 1MB Ram Card for ProSpeed 286 .....               | <b>\$595</b>  | 8 MB Ram Card for ProSpeed 386 .....                 | <b>\$2695</b> |
| 4MB Ram Card for ProSpeed 286 .....               | <b>\$1695</b> | Battery Slice for ProSpeed 386 .....                 | <b>\$249</b>  |
| Expansion Station for ProSpeed 286 .....          | <b>\$747</b>  |                                                      |               |

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|-----------------------|----------------------|-------------|------------|-------------|
| <b>IBM PS/2</b>       |                      |             |            |             |
| 25                    | 128K KIT             | 78X8955     | \$ 50      | \$ 37       |
| 30/286, 50, 60        | 512K KIT             | 30F5348     | \$ 200     | \$ 49       |
|                       | 2MB KIT              | 30F5380     | \$ 795     | \$ 170      |
| 55SX                  | 1MB MODULE           | 6450603     | \$ 450     | \$ 89       |
| 50Z, 55SX, 65SX       | 2MB MODULE           | 6450604     | \$ 950     | \$ 175      |
| 55SX, 65SX            | 4MB MODULE           | 34F2933     | \$2,195    | \$ 549      |
| 50,                   | 2-8MB EXP BRD w/2MB  | 1497259     | \$1,350    | \$ 575      |
| 50Z,                  | 2-8MB EXP BRD w/4MB  | 1497259+    | \$2,040    | \$ 725      |
| 55SX,                 | 2-8MB EXP BRD w/6MB  | 1497259+    | \$2,830    | \$ 875      |
| 65SX                  | 2-8MB EXP BRD w/8MB  | 1497259+    | \$3,620    | \$1,025     |
| 70-E61,               | 1MB MODULE           | 6450603     | \$ 450     | \$ 89       |
| 70-061,               | 2MB MODULE           | 6450604     | \$ 950     | \$ 175      |
| 70-121                |                      |             |            |             |
| 70-A21, A61, B21, B61 | 1MB MODULE           | 6450603     | \$ 450     | \$ 89       |
|                       | 2MB MODULE           | 6450604     | \$ 950     | \$ 175      |
|                       | 2MB MODULE           | 6450608     | \$ 950     | \$ 183      |
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| 80-All Models         | 2-8MB EXP BRD w/4MB  | 6450605+    | \$2,890    | \$ 629      |
|                       | 2-8MB EXP BRD w/6MB  | 6450605+    | \$4,185    | \$ 779      |
|                       | 2-8MB EXP BRD w/8MB  | 6450605+    | \$5,480    | \$ 929      |
|                       | 2-14MB EXP BRD w/2MB | 34F3077     |            | \$577       |
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| 80-041                | 1MB BOARD            | 6450375     | \$ 675     | \$ 135      |
| 80-041, 071           | 2MB MODULE           | 6450372     | \$1,295    | \$ 429      |
| 80-A21, A31           | 4MB BOARD            | 6451060     | \$1,895    | \$ 694      |
| 80-All Models         | 1MB MODULE           | 6450603     | \$ 450     | \$ 89       |
|                       | 2MB MODULE           | 6450604     | \$ 950     | \$ 175      |
|                       | 2MB BOARD            | 6450379     | \$ 950     | \$ 249      |
|                       | 4MB MODULE           | 34F2933     | \$2,195    | \$ 722      |
| PORTABLE P70          | 2MB MODULE           | 6450604     | \$ 950     | \$ 175      |
| 4019/E                | 1MB MODULE           | 1039136     | \$ 450     | \$ 245      |
| LASER                 | 2MB MODULE           | 1039137     | \$ 850     | \$ 339      |
| PRINTER               | 3.5MB MODULE         | 1038675     | \$1,495    | \$ 445      |

|                            |                     |            |         |         |
|----------------------------|---------------------|------------|---------|---------|
| <b>COMPAQ</b>              |                     |            |         |         |
| DESKPRO 286E               | 1MB MODULE          | 113131-001 | \$ 450  | \$ 129  |
|                            | 4MB MODULE          | 113132-001 | \$1,950 | \$ 359  |
| DESKPRO 386/16             | 1MB KIT             | 108071-001 | \$ 635  | \$ 182  |
|                            | 4MB KIT             | 108072-001 | \$2,550 | \$ 750  |
|                            | 1-2MB EXP BRD w/1MB | 108069-001 | \$ 650  | \$ 412  |
|                            | 4-8MB EXP BRD w/4MB | 108070-001 | \$2,550 | \$1,236 |
| DESKPRO 386S               | 1MB MODULE          | 113646-001 | \$ 450  | \$ 128  |
|                            | 1MB BOARD           | 113633-001 | \$ 650  | \$ 285  |
|                            | 4MB MODULE          | 112534-001 | \$1,950 | \$ 365  |
|                            | 4MB BOARD           | 113634-001 | \$2,395 | \$ 595  |
| DESKPRO 386/20, 25         | 1MB MODULE          | 113131-001 | \$ 450  | \$ 129  |
|                            | 4MB MODULE          | 113132-001 | \$1,950 | \$ 359  |
| DESKPRO 386/20E, 25E       | 1MB MODULE          | 113131-001 | \$ 450  | \$ 129  |
|                            | 1MB BOARD           | 113644-001 | \$ 650  | \$ 230  |
|                            | 4MB MODULE          | 113132-001 | \$1,950 | \$ 359  |
|                            | 4MB BOARD           | 113645-001 | \$2,395 | \$ 595  |
| DESKPRO 386/33             | 2MB MODULE          | 115144-001 | \$ 950  | \$ 204  |
| DESKPRO 486/25, SYSTEM PRO | 2MB MODULE          | 115144-001 | \$ 950  | \$ 204  |
|                            | 8MB MODULE          | 115661-001 | \$5,195 | \$1,980 |
| PORTABLE 386               | 1MB KIT             | 107651-001 | \$ 650  | \$ 259  |
|                            | 4MB BOARD           | 107653-001 | \$2,395 | \$ 890  |
|                            | 4MB EXT BOARD       | 107654-001 | \$2,395 | \$ 985  |
| PORTABLE III               | 512K KIT            | 107331-001 | \$ 269  | \$ 49   |
|                            | 2MB KIT             | 107332-001 | \$1,100 | \$ 164  |
| PORTABLE LTE               | 512K BOARD          | 117077-001 | \$ 295  | \$ 197  |
|                            | 1MB BOARD           | 117081-001 | \$ 650  | \$ 239  |
|                            | 2MB BOARD           | 117081-002 | \$1,250 | \$ 277  |
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|                    | 4MB EXP KIT | M6006     | \$ 950  | \$ 334  |

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| <b>AST RESEARCH</b>      |                  |            |        |        |
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|                          | 512K KIT         | 500510-010 | \$ 135 | \$ 54  |
|                          | 2MB KIT          | 500510-002 | \$ 345 | \$ 169 |
| BRAVO 386SX              | 512K KIT         | 500510-010 | \$ 135 | \$ 54  |
|                          | 2MB KIT          | 500510-002 | \$ 345 | \$ 169 |
| PREMIUM 286 ADVANCED     | 1MB KIT          | 500510-007 | \$ 260 | \$ 89  |
|                          | 2MB KIT          | 500510-002 | \$ 345 | \$ 169 |
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|                          | 2MB KIT          | 500510-002 | \$ 345 | \$ 169 |
| PREMIUM 386SX/16, 386/25 | 1MB MODULE       | 500718-001 | \$ 195 | \$ 89  |
|                          | 1-16MB EXP BOARD | 500722-004 |        | \$ 562 |

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|                                      | 1-16MB EXP BOARD | 500722-004  |            | \$ 562      |
| PREMIUM 386/16, 386C                 | 1MB KIT          | 500510-007  | \$ 260     | \$ 89       |
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| 6386, 6386E                  | 1MB UPGRADE | 37714 | \$ 750  | \$ 105 |
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## It Came From 3D

*How Joe Conti And A \$300 Used Amiga Found Fame And Fortune In Tinseltown*

**BY BEN AND JEAN MEANS**

*Visualization—the formation of a mental image of something not visible. A vivid passage in a favorite novel, the fond remembrance of a childhood friend, the fragrance of your favorite flower...all these things bring forth billowing clouds of imagery to dance before your mind's eye. Their emotional content lights these scenes with feeling and meaning; this is the effortless, natural visualization that we all experience every night on the brink of slumber.*

In the hard fluorescent light at the office, however, visualization is not so easy. Creativity strains under deadlines and rising costs to fill a growing need for the efficient translation of dreams into patterns of concrete reality.

On the edge of the California desert, Joe Conti sits serenely in his office overlooking the solitude of unbroken hills. Quietly turn-

ing visions into profits, his Amiga launched Conti on a course of overnight success charted in *Forbes* and *PC Week*.

Conti began his precipitous climb in 1987 when he arrived in Los Angeles with a cinematography degree tucked under one arm and an Amiga 1000 under the other. He bought a used Amiga for \$300, and it earned him \$30,000 the first year...for a 10,000% return on his investment.

### 3D MODELING: THE WAVE OF THE FUTURE

In his desert retreat, Conti models hundred-million-dollar architectural projects in his computer. He predicts, "Within the next few years, 3D will be the major design tool for everybody. 3D will implement production

design; it will implement the prototyping of everything from doorknobs to nails. Designers will use 3D in building houses, in building cities, in building worlds. It will be the number-one design tool, and the people who get in on it now will be the design leaders in the coming years."

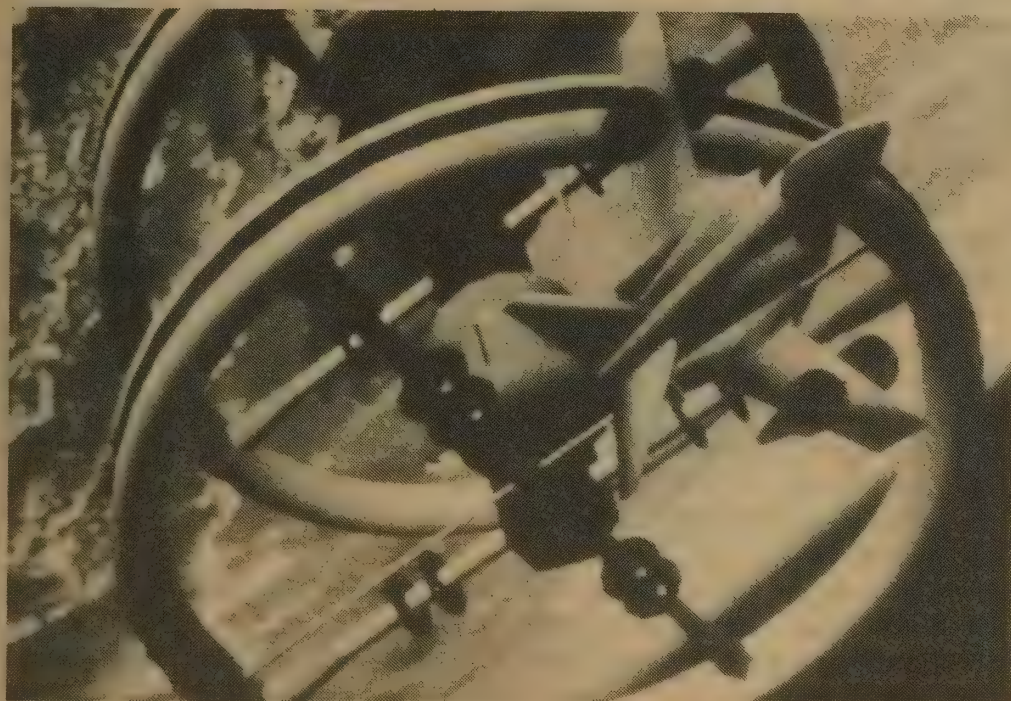
When we visit, Conti is hard at work building a world in his Amiga. "I'm modeling this several-hundred-mil-

lion-dollar theme park in the computer," he explains. Contrasting with the rose bushes and the stretch of distant hills outside the window, the computer soars in from the north over an imaginary landscape with beautiful Gothic spires, turns west over a square-rigged Spanish galleon, and dives toward an ornate Mediterranean opera house. "The project is very similar to the Epcot Center, but taken a step further, like a

whole new generation of theme park. There are several different themes: futuristic, a combination of French, Italian, Mediterranean, and different pieces from all over the world, so it's world class. This is the first time that the Amiga has been used on a project of this scale."

John DeCuir, Jr., a master designer of Disney World's Epcot Center, designed the blueprints for this world-class theme park,

**With the Amiga's low cost and ease of use, Conti can tailor his presentations to each prospective customer.**



**Joe Conti uses a Sunrize color splitter to capture NASA planets from a laser disk, superimposes his 3-D models and shoots them to film with a 2 1/4" camera set to soft focus.**

which Joe Conti is rendering into an accurate 3D scale model. Conti first sends DeCuir's blueprints out to a scanning house, which digitizes and saves them as IBM AutoCAD files. Then he calls up the AutoCAD files on his 286 IBM clone and changes them into Amiga Sculpt 4D files with ACAD translation software. He extrudes the 2D plans to the heights indicated on the blueprints and adds windows, cornices, spires and parapets. With the finished Amiga model, he can output 3D stills from any angle or elevation or do thrilling animated fly-bys.



# CREATIVE TOOLS

3D modeling and animation on the Amiga lowers design costs while providing vivid images of the future. Conti explains, "A conventional architectural model would cost about \$250,000 and would probably take about nine months to make. The Japanese love computer graphics, more than anything else, and these graphics will probably have the most impact in selling the whole project. That's how important it is. These computer graphics may be only 2% of the actual design budget, but they may have a 50% impact on whether the project makes it or not.

"The best part of the business with the Amiga—and this happens constantly—is that I won't even have a section modeled yet,



Conti uses the Amiga to prototype building projects

and I'll get a phone call that they need pictures in Japan in two days. There may be no way, but that's no excuse. You have to get it done! I'll model what I can, take pictures, develop them at One Hour Photo and Fed Ex them to Japan the next day. That happens all the time, and you would never find that on any other computer system."

## AMIGA MAKES ITS MARK

Conti gained his first screen credit (without the Amiga) when he worked on the special effects for *Die Hard*. But he was still a fledgling newcomer on the Hollywood block when he met seasoned production designer John DeCuir, Jr., whose credits include the films *2001*, *Earth Star Voyager* and *Top Gun*.

Conti recalls, "I introduced him to the Amiga. It was love at first sight because the Amiga could handle everything he needed to do and could not solve. He needed slides for presentations but couldn't add color titles. They had to rub titles down on cards, photograph them, and still only got black-and-white titles. I whipped out Deluxe Paint, did some fancy logos, and BAM!! I had computer graphics. When I dumped it to slide, it was the greatest thing he'd ever seen! It blows his

clients away and is extremely inexpensive. Places in LA wanted to charge him \$600 a slide, and I was doing it for \$15 a slide."

While the Amiga's 2D slides impressed DeCuir, its 3D capabilities made him a convert. Says Conti, "I showed John a couple of 3D wireframes of a building, and that really got to him, because he had seen how Ford Motor Company did renderings of 3D prototypes. They had a \$2 1/2 million piece of hardware dedicated to doing wireframes. Basically I was doing the exact same thing on the Amiga. That was it! He said, 'Buy me one because this is unbelievable!'"

Conti soon progressed from slide presentations to 2D animation and then 3D graphics and animation. Soon DeCuir was doing everything on the Amiga, and Conti found a secure job as his key graphic artist.

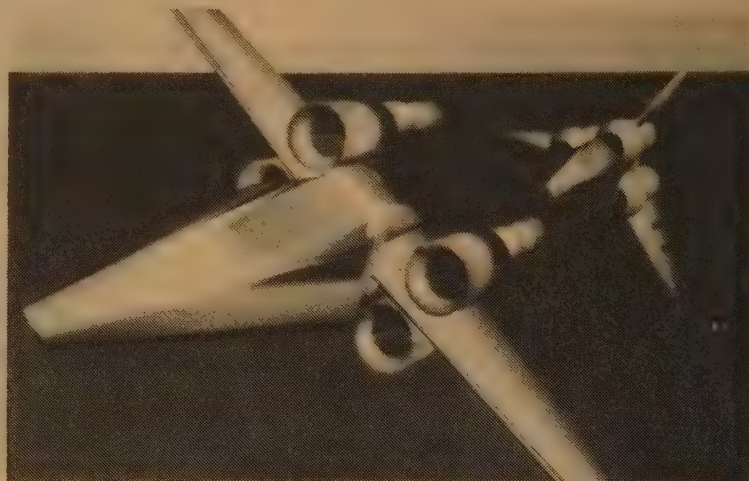
The Amiga's speed turned out to be crucial for Conti in keeping a busy designer like DeCuir satisfied with his work. He says, "DeCuir has a bunch of different projects going on continuously. Every day it's something different, and I have it done a day later.

"It's very important to produce the work as fast and as cheaply as possible because it's all on spec until the contract is signed. Sometimes he'll work on a project for two solid weeks, and then the client cans the project. So he wants to invest as little money as possible starting each project. If I produce work that was even just a few [percentage points] higher, that translates into money he'll just throw away.

"There are other people out there who are better than me, but I'm such a great deal because I delivered it yesterday, it's quality work and the price is right! Those are the three major factors, and the Amiga is the machine for delivering them.

"Working for myself—living here among the roses and the mountains—is like a dream; the fact that the Amiga is so inexpensive is what makes it that way. If I had financed \$20,000 to buy a Mac II, a scanner, a video board and some expensive software, I would be freaking out about paying my next bill. But I don't owe anybody money, there's no loans, I didn't borrow anything; everything in my studio is paid for because I had a

**When Mattel wanted a graphics computer system for prototyping toys, everyone from WaveFront to Alias bid for the account. Mattel ultimately chose Joseph Conti and his Amiga system, which immediately began to save them time and money.**



3-D animation allows for the quick creation of sophisticated air battles

\$300 Amiga 1000 which generated \$30,000 in my first year."

With the Amiga's low cost and ease of use, Conti can tailor his presentations to each prospective customer. Disney wanted graphics for a new pilot similar to what Video Image, an industry leader, had done for the space epic *2010*. So Conti picked out the best computer animation in *2010*, which was a wireframe where you fall away from the spaceship *Discovery* through a series of red triangles. He says, "Video Image produced the original effect for about \$6,000, and I reproduced it in ten minutes exactly. I brought



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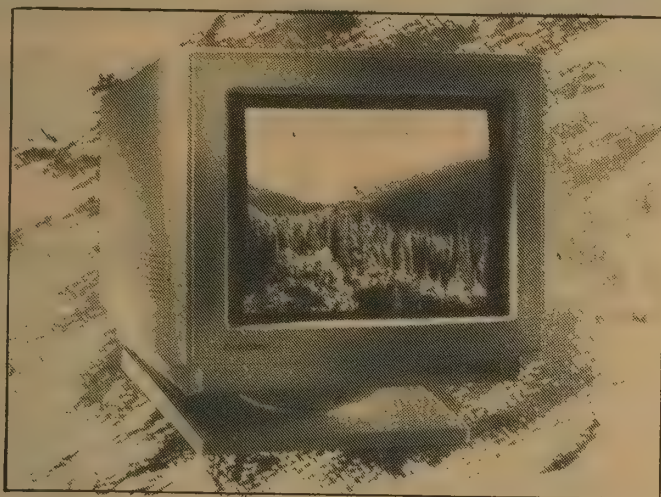
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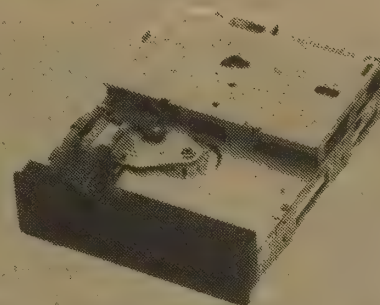
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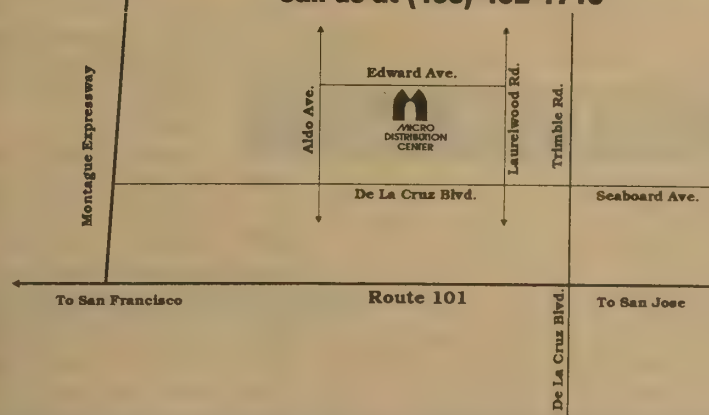
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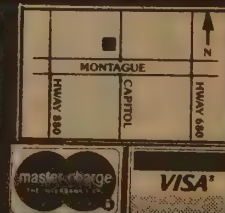
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it back to Disney and said, '2010, here it is; I did it in ten minutes. If I was going to charge you, it would be \$600, and this is what you would get.' It got their interest!"

When Mattel wanted a graphics computer system for prototyping toys, everyone from WaveFront to Alias bid for the account. Mattel ultimately chose Joseph Conti and his Amiga system, which immediately began to save them time and money. Conti explains, "Traditionally, Mattel hired animators to hand-draw animation cels and then dump them to video. Animation took months of work and cost thousands of man-hour dollars. But Deluxe Paint animation advanced them about 1,000 years ahead of their time. They use the animations in product design to show children how a toy will work, or they can digitize a prototype with Digi-View and then animate it dancing around. Executives use tapes from the Amiga to start planning marketing strategies.

"So it's really filling a lot of cracks for them, and schedule compression is the most important. A toy takes two years from concept to completion; so they're planning toys for Christmas two years from now. They need to compress that as much as they can, and the Amiga is really doing that. They can do the animations now in a couple of minutes, instead of a couple of months. And with 3D

modeling, they can really plan the product out before they even finish drawing it."

## BEATING THE LEARNING CURVE

Conti admits candidly, "I'm one of those artists who can't draw anything freehand, but I can build it with the building blocks of a 3D program. I can visualize things in 3D, add color and texture, and then let the computer worry about the shading, lighting and perspective.

"You don't have to be an artist to do 3D; you have to be a film person or a director to know the setups, the movement and the motion. In 2D you have to be a cel animator and hand-draw each piece to some extent, then move it. But in 3D, I build it and the computer generates everything."

Next to cost, the learning curve is 3D's biggest barrier. When Conti's workload became too heavy, he hired his brother Paul, a world class sous chef with no computer experience, instead of hiring an experienced animator. Conti explains, "I was really busy when I asked Paul to come out here from Santa Fe. He knew nothing about computers, didn't even know how to turn them on; I had to show him everything. It was slow at first, but in only six months he became one of the best 3D modelers I know of."

Soon his brother Paul had outgrown this fraternal partnership and started taking on his own outside contracts. Conti found himself again with more work than he could handle. "It's my own fault," laments Conti. "I told him it was a really good opportunity. This company picked him up, and now I can't get him back. I need him back here, but he's making more money than he ever did as a gourmet chef..."

## WISH LIST

For now, Conti is happy with his Amiga but he has strong thoughts about where it needs to expand. "The Amiga needs a graphics board that supports sixteen million colors and has 2K by 2K resolution. If DPaint had 2K by 2K resolution and sixteenmillion colors, everyone would use it all over the world as the number-one paint package."

Conti has dreams for the Amiga's future but relies on what it can do today for these multi-million-dollar design projects. The bottom line is that for Conti, dollar for dollar, the Amiga is the best 3D animation machine—"No other computer can do 3D animation at a decent price. You'll never find anything near the quality for the price of an Amiga." ■



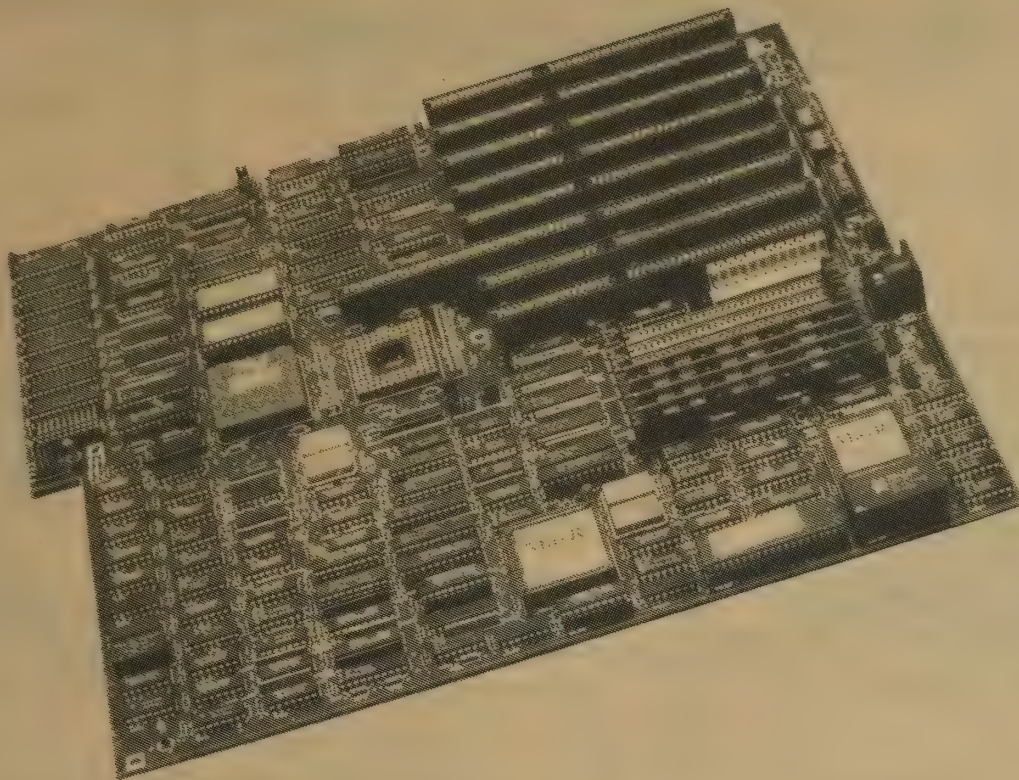
Using shapes and 3-D modeling, it's easy to imagine and create toys and games, and animations

**Joe Conti: "There are other people out there who are better than me, but I'm such a great deal because I delivered it yesterday, it's quality work and the price is right! Those are the three major factors, and the Amiga is the machine for delivering them."**



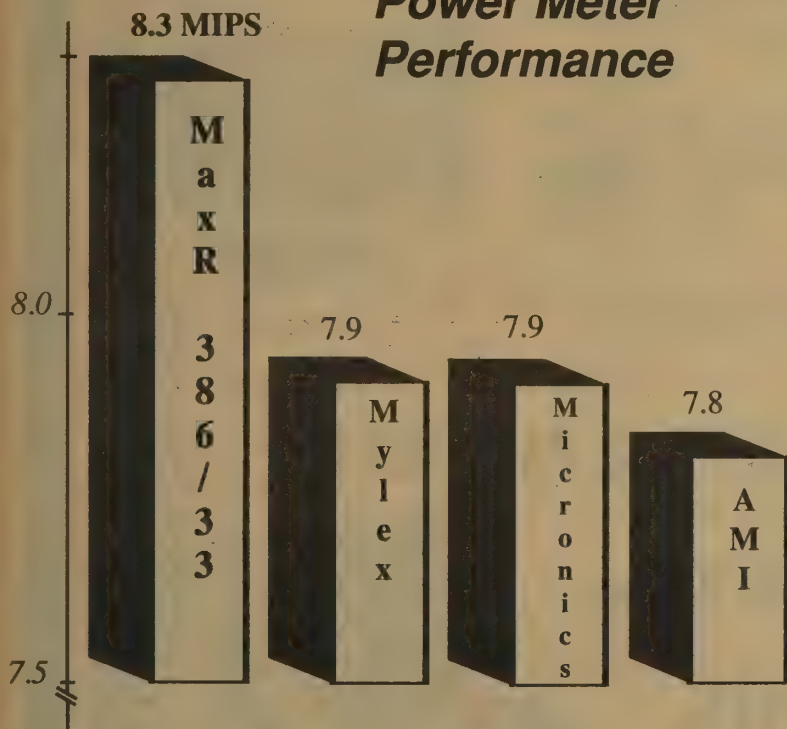
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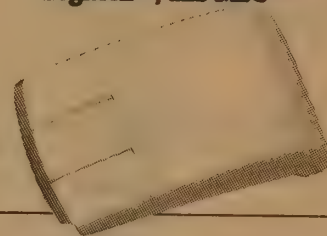


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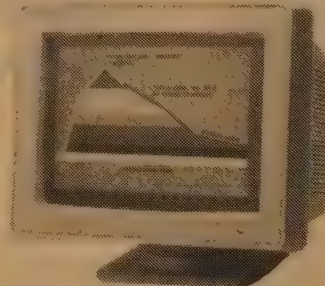
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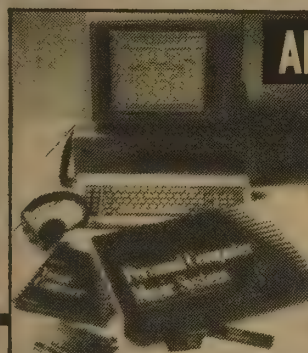
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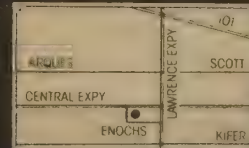
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# Disney's Animation Studio

**BY MATTHEW LEEDS**

**T**he Amiga excels as a graphics and animation system. Its powerful graphics hardware, coupled with its ease of interfacing to video, has encouraged developers to create innovative products that expand the definition of consumer computer graphics.

Walt Disney Computer Software has finally released The Animation Studio, the first full-featured animation and paint program that uses cel animation techniques in the style of traditional Disney cartoons.

## THE ANIMATION STUDIO

The Animation Studio (I'll call it DAS for Disney Animation Studio) consists of three

## AMIGA

main modules: Pencil Test, where you create a black & white cel animation; Ink & Paint, where you color in the animation and add background elements; and Exposure Sheet, where you set up the order and timing of the animation, and add in sound and music. DAS supports standard IFF image, sound, and music files, and will also read in and create ANIM format animation files.

DAS evolved from a prototype application originally called Onion. The salient feature of Onion, retained in DAS, was the shadowed display of several cels overlaid on the screen. The cel in the foreground is displayed in black, with up to three prior cels displayed in sequentially lighter shades of gray. Traditional animators use a similar, but laborious process, of overlaying transparent or translucent sheets of plastic or onionskin paper to check the alignment and progress of their animation.

## FEATURES AND CAPABILITIES

It's impossible to cover everything that DAS offers without duplicating the manual here, so I'll just touch on some of the high points. The package is a model of professionalism. There is a separate manual called "Getting Started," a much larger user's guide that covers every feature in depth and includes an index, and a separate card with all of the keyboard commands. The manual-based

theft protection uses questions from the manual that a regular user will soon memorize, and it doesn't use deep red paper, a code wheel, or other unmanageable device.

The program includes an excellent set of tutorials on classic animation techniques. It's far and away the best way to learn the basics of animation, and DAS would make an exceptional teaching tool. The library of animation files let you actually see how an animator creates the illusion of motion.

The interface for Pencil Test and Ink & Paint is instantly familiar to Deluxe Paint users. A toolbox runs down the right side of the screen, and the icons used for the tools are mostly the same. Some of the unique tools include those that relate to creation and control of cels, a dithered fill tool, an NTSC filter, and individual palette control over each cel.

DAS includes player programs for its unique animation file format that includes sound and music. You can create standard ANIM files, but those do not include audio. In fact, DAS is an excellent tool for adding audio to existing ANIMs.

## NOTHING'S PERFECT...

In the tradition of reviewers everywhere, I've got a few small bones to pick with DAS. The program disk uses overly large icons for the

programs it contains, but neglects to include an .info file for the sound effects drawer. In fact, the manual does not mention it in the hard disk installation section at all. There's only an oblique reference in the Appendix. The Open file requester does not parse files based on their type, although its submenu does list IFF, ANIM, and CFAST. This creates some confusion when the program refuses to load files you've selected.

Also, as with many other programs, DAS has some problems with AmigaDOS 2.0. A3000 owners are advised (by me) to use ADOS 1.3 with DAS until all of the problems are resolved.

## IN OTHER NEWS...

Commodore has finally shipped an ADOS 2.0 compatible version of AmigaVision. It's worthy of notice that it took Commodore several months to accomplish this. Given that the "official" reason AmigaVision was considered not compatible was a minor bug in the database section, I wonder if this timeframe will be typical for other developers also attempting to make their products 2.0 compatible.

The ad that Commodore is running in *AmigaWorld* listing 2.0 compatible products is thin, and many of the most important graph-



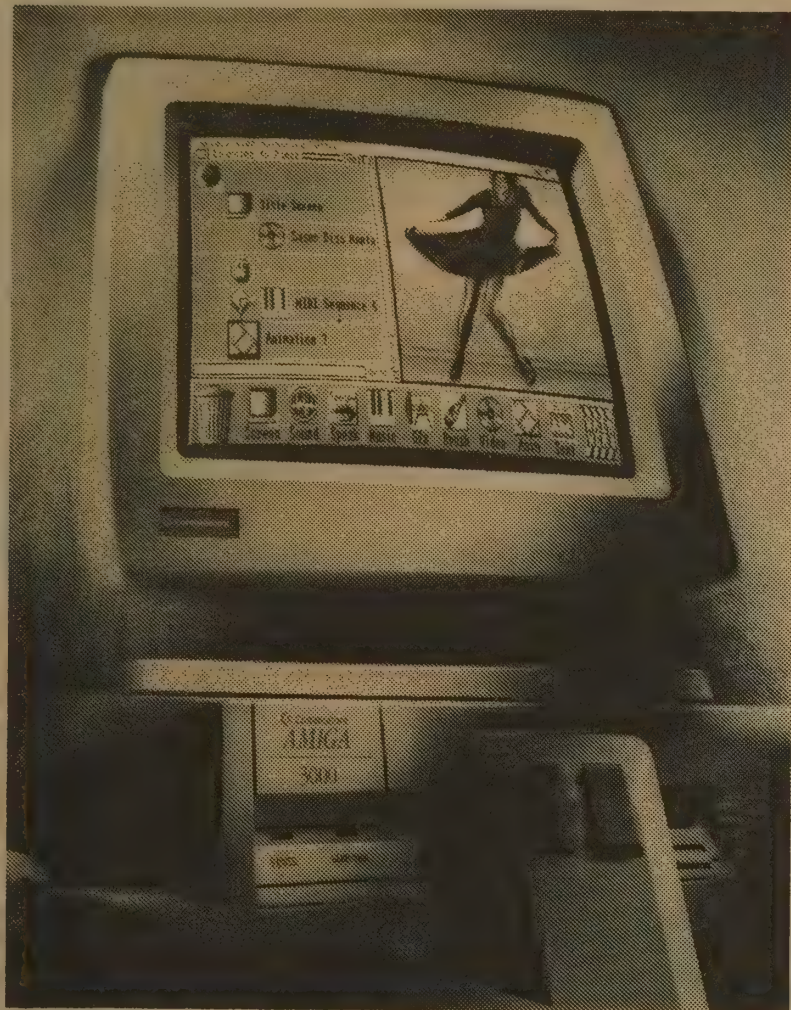
Copyright © 1990. All rights reserved. Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.

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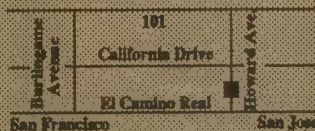
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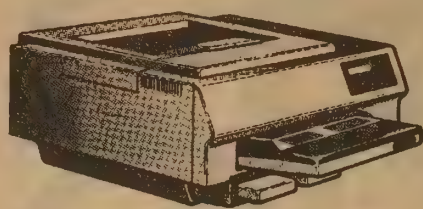
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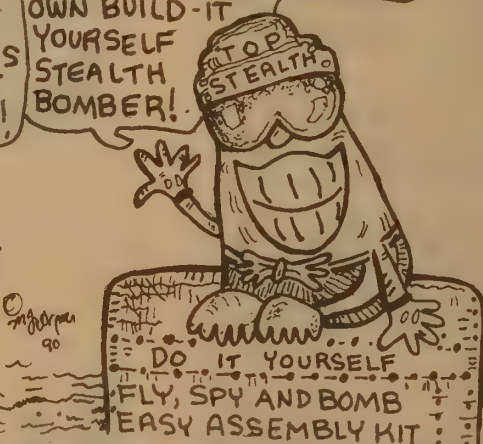
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| PS/2 Model 65 SX-60/65 SX-120      | 3595/Call      |
| PS/2 Model 70 E61/70 E120          | 2950/3395      |
| PS/2 Model 70-061/70-121           | 3450/3695      |
| PS/2 Model 70 A61/70 A21           | 4895/5295      |
| PS/2 Model P73-61/P73-121          | 5050/5595      |
| PS/2 Model 80-44/80-70             | 3595/4195      |
| PS/2 Model 80-111/80-315           | 4695/6075      |

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|-------------------------|----------|
| IBM VGA Mono 8503       | '199     |
| IBM VGA Color 8512/8513 | 435/535  |
| IBM VGA Color 8514/8515 | 985/725  |
| Adapter 8514A/Memory    | 850/215  |
| ProPrinter II/III       | 365/450  |
| ProPrinter IIXL/IIIXL   | 395/535  |
| ProPrinter X24/XL24E    | 495/699  |
| IBM Laser 4019-001/E01  | 1595/999 |
| IBM DOS 3.3/4.0         | 85/110   |
| EXT 1.2 MB for PS/2     | 229      |

### IBM MEMORY UPGRADES

|                                         |         |
|-----------------------------------------|---------|
| PS/2 30-286 512/2 MB                    | '69/225 |
| PS/2 50Z/55SX 1 MB/2 MB                 | 135/220 |
| PS/2 70-E61 and 70-121 1 MB/2 MB        | 135/220 |
| PS/2 70-A21 2 MB                        | 220     |
| PS/2 80-041 1 MB                        | 150     |
| PS/2 80-111 and 80-311 2 MB             | 385     |
| PS/2 Model 70/80 2-8 MB Memory Board    | 395     |
| PS/2 Model 50/60 512K-2 MB Memory Board | 195     |

## COMPAQ

### DESKPRO MODELS

|                               |                 |
|-------------------------------|-----------------|
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| 386S Model 1/20/40 w/2 MB     | 2050/2395/2525  |
| 386/20E Model 1/40/110 w/4 MB | 3475/3850/4350  |
| 386S/20E Model 100            | 2725/4215       |
| 386/25 Model 84/110/300       | 5150/5895/6995  |
| 386/25E Model 1/60/120        | 4425/4895/5295  |
| 386/33 Model 84/320/640       | 6850/8595/Call  |
| 286N & 386N                   | Best            |
| 486-25 & SystemPro            | Price           |

### PORTABLES & MONITORS

|                           |                |
|---------------------------|----------------|
| LTE 80C86                 | '1895          |
| LTE 286 Model 1/20/40     | 2250/2425/2795 |
| SLT 286 Model 20/40       | 3565/3865      |
| Portable III Model 20/40  | 3450/3595      |
| Portable 386 Model 40/100 | 4650/5095      |
| Compaq VGA Color          | 495            |
| New Compaq VGA Mono 14"   | 235            |

### COMPAQ MEMORY UPGRADES

|                                    |          |
|------------------------------------|----------|
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| DP 386/20, 25 1 MB/4 MB Mem Module | 179/465  |
| DP 386/20E 1 MB/4 MB Mem Board     | 275/620  |
| DP 386S 1 MB/4 MB Mem Board        | 189/610  |
| Portable 386 1 MB/4 MB             | 189/695  |
| Portable SLT/286 1 MB              | 195      |
| Portable III 512K/2 MB             | 49/170   |
| DeskPro 286E 1 MB/4 MB             | 469/1369 |
| LTE 286 1 MB/2 MB                  | 210/275  |

## AST RESEARCH

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|-------------------|------|
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| 386Sx mod 5       | 1650 |
| 386C mod 300c     | 2655 |
| 386/25 mod 5      | 2950 |
| 386/33 mod 5      | 3470 |
| 486/25 mod 5      | 4650 |
| BRAVO 286 mod 5   | 825  |
| BRAVO 386SX mod 5 | 1450 |

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|------------------------------------------|-----|
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| VGA 16 Bit Card 1024x768                 | 135 |
| AST OEM VGA Color Monitor 1024x768 28DPI | 385 |
| VGA 16 Bit 800x600                       | 95  |
| AST OEM 768x480                          | 295 |
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| 100 MB Upgrade                           | 695 |

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|                       |            |
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| MAC SE/30 40/80 MB HD | 2935/3650  |
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| MAC II CI 40/80 MB HD | 4595/5250  |
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| T3100E/40          | 2550      |
| T3100SX/T3100SX-80 | 3595/4095 |
| T5100-100/3200SX   | 3795/3720 |
| T5200-40/100       | 4385/4695 |

### MEMORY ACCESSORIES

|                         |         |
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| 2 MB for T1600/T3200SX  | 225     |
| 2 MB for T5100/T5200    | 225     |
| 2 MB for T3100SX        | 225     |
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| 1-2 MB EXT Disk Drive   | 220     |

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| 320/321 300 cps, 62 nlq                | 342/455 |
| 390/391 24 pin 270, 90 nlq             | 439/609 |
| 393 Plus 24 pin, 517/138 cps, 132 col  | 945     |
| 393C Plus 24 pin, 517/138 cps, 132 col | 1025    |

## TOSHIBA

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|------------------------------------|------|
| Express Writer 301 60 CPS, 24 Pin  | '275 |
| Express Writer 311 180 CPS, 24 Pin | 310  |
| P321SL 216 CPS, 24 Pin             | 349  |
| P341SL 216 CPS, 24 Pin             | 465  |

## EPSON

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|-------------------------------|----------|
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| FX 850/LQ 850                 | 325/499  |
| LQ 1010 80/60 cps, 136 col    | 325      |
| LQ 950/LQ 860                 | 525/595  |
| FX 1050/LQ 1050               | 435/635  |
| LQ 2550 400/133 cps, 136 col  | 899      |
| DEX 5000 533/80 cps, 136 col  | 1345     |
| EPL 6000 Laser 6 ppm, 300 dpi | 929      |

## Intel

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| 80387-25/80387-33   | 445/545  |
| Intel 80387-16      | 339      |

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# CREATIVE TOOLS

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### Disney Consumer Products

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23rd Floor  
Burbank, CA 91505

### Saddleback Graphics

3621 W. MacArthur  
Blvd. Suite 119  
Santa Ana, CA 92704

ics and animation products are not included.

If you're trying to interest a small child in computer graphics, you might take a look at My Paint from Saddleback Graphics. It's designed to keep kids interested, and comes with pictures that your kids can color in themselves. My Paint provides both visual and audio feedback, taking advantage of the Amiga's speech and sound capabilities.

Kodak has taken a quantum leap in the vaporware department by announcing Photo CD two years before they expect to bring it to market. The heart of the system is a write-once compact disc recorder that commercial film processors will use to record 35mm film images. Kodak's idea is that consumers will send their film to a commercial processor, who will provide conventional prints from the film and/or digitize and record the images on a Photo CD. The CD will be initially priced under \$20, and will serve as a master for additional prints that will be reproduced on a thermal printer in-

stead of conventional photographic processing equipment.

Once a Photo CD has been produced, consumers can request a thermal print proof sheet, or view their Photo CD on a Photo CD player, expected to be priced around \$500. The Photo CD player will also play CD-Audio discs. Photo CD discs will also display on CD-ROM XA drives (MS-DOS) and CD-I players.

A single Photo CD disc can hold over one hundred high-resolution images. Kodak is planning on digitizing systems that support eighteen million bits in a 3K-by-2K pixel matrix. The file structure of the images will be such that three display modes will be supported: a low-res mode for display on standard TV sets, a medium-res mode for display on high-res computer monitors, and a 3K-by-2K mode for hard copy output. Kodak claims that the digitizing, mastering, and printing system will sell for under \$100,000.

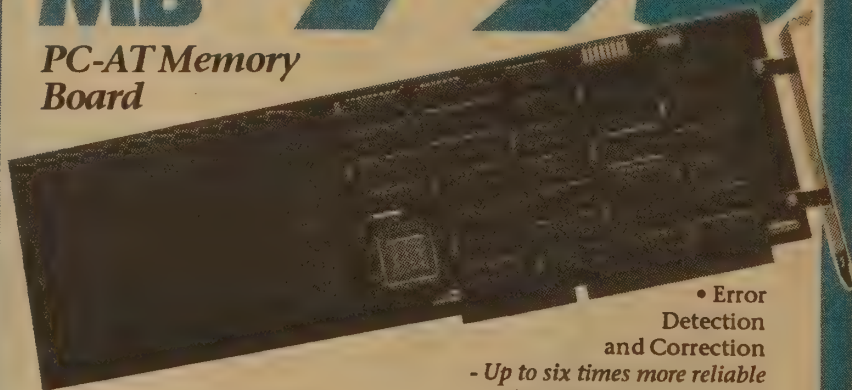
The workstation portion of the system will be manufactured by Sun Microsystems. Kodak already produces digital continuous

**Walt Disney Computer Software has finally released The Animation Studio, the first full-featured animation and paint program that uses cel animation techniques in the style of traditional Disney cartoons.**

tone color printers with image output up to 11x11". I assume that Commodore is talking with Kodak to ensure that CDTV will also support Photo CD. ■

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# Connecting Your Atari To A Net Join The World Of UUCP

BY DAVID  
HAWKINS

There's a network called USENET, consisting of UNIX-based computers that exchange electronic mail (commonly referred to as email) and newsarticles. You can use your Atari to connect to that net, thanks to a new program called Mercury UUCP.

USENET can be a good way to read about

ATARI ST

things you're interested in. There are hundreds of

newsgroups and a full feed of news will run from 2 to 16Mb a day. For some reason most people choose to follow only a small part of this and select one or two areas to read and participate in.

### WHAT IS UUCP?

The network uses UUCP to exchange data. UUCP stands for "UNIX-to-UNIX CoPy" which means that it's a standard for copying information between computers.

The Atari is not a UNIX-based computer and can't run a true version of UNIX, but it can use a program that follows the UUCP guidelines to handle USENET information.

### MERCURY UUCP

Mercury UUCP is a free program written in Germany by Rodney Volz. It's actually a collection of small programs that handle the different jobs required to set up and maintain a UUCP connection. I got my copy from the USENET newsgroup on Ataris, but you might be able to find a copy through your local users group or on a BBS. Volz originally called it Mercury UUCP, but it might show up as "Rodney's UUCP Modules."

It's possible to get the source code to this program. It's written in K&R C; if you know C you could change it and recompile it. I picked up an already compiled version, since I'd just as soon not mess with recompiling it.

### SETTING UP UUCP ON THE ATARI

If you've never set up a UUCP connection,

this might be a bit tricky—the manual with Mercury UUCP is a little sketchy. Actually it comes with two manuals, one of which is in German. The German one might have more details, but you'll probably need someone who reads the language to get much info from it. The "Nutshell" book series that some technical bookstores carry covers setting up a UUCP connection. Those books would be helpful.

Basically there's one file in Mercury that you have to edit to make it work. The file is called "config.sys" and includes lines where you put in certain basic information.

For example, the first line of config.sys is:

```
0001 "D:"      # System-drive
```

That tells the program that the programs that handle news and email are on partition D of your hard disk.

The second line of config.sys is:

```
0002 "merkur" # Sitename
```

When you get on the net your site has a unique name. Unfortunately some of the more common and cute names have already been used, so you would need to check with the site you connect to about whether the name you want is available.

### GETTING A FEED

To connect to USENET you need a connection point. It may be that you know the system operator/administrator of a local system who'll let you call in and pick up email and news at no charge. Otherwise you might need to go to a commercial connection point and pay to get these services. Here are two options if you can't find a free connection:

The first is UUNET Communications Services in Falls Church, Virginia. Contact James Revell, Jr., 3110 Fairview Park Dr., Suite 570, Falls Church, VA 22042-4239. Phone is (703)876-5050.

The second is Anterior Technology in Menlo Park, California. Contact Geoff Goo-

**UUCP stands for "UNIX-to-UNIX CoPy" which means that it's a standard for copying information between computers. The Atari is not a UNIX-based computer and can't run a true version of UNIX, but it can use a program that follows the UUCP guidelines to handle USENET information.**

dfellow, PO Box 1206uu, Menlo Park, CA 94026-1206. Phone is (415)328-5615.

### THE EASY WAY OUT

If all this sounds like too much work and hassle, you can get an account on a local system that carries USENET. On a USENET site you can read newsgroups like comp.sys.atari.st for general discussion about the ST, as well as newsgroups that carry programs, both source code and binaries, that you can run on the ST.

There are probably a few USENET sites that advertise here in *MicroTimes*, so check through here, as well as in the BBS listings, since some BBSes carry certain USENET newsgroups. ■



Copyright © 1990 by David Hawkins. All rights reserved. David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco. Both monitors, an Okimate 20 color printer, and disks are all over the room.



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|---------|---------|---------|----------|----------|
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| w/20 MB Drive | 599 | 539 | 899  | 1039 | 1139 |
| w/42 MB Drive | 699 | 739 | 999  | 1139 | 1239 |
| w/80 MB Drive | 909 | 949 | 1209 | 1349 | 1449 |

#### DCP 80286-16 MHz

##### AT COMPATIBLE with 1 MB RAM

|               |     |      |      |      |      |
|---------------|-----|------|------|------|------|
| Basic System  | 529 | 569  | 839  | 969  | 1079 |
| w/20 MB Drive | 669 | 709  | 979  | 1109 | 1219 |
| w/42 MB Drive | 729 | 819  | 1079 | 1219 | 1319 |
| w/80 MB Drive | 989 | 1029 | 1289 | 1429 | 1529 |

\*8088 Includes Multi I/O, 1 serial, 1 parallel, 1 game, Floppy Drive, 101 Keyboard, Mono card and Monitor, Case with 150 Watt Power Supply

#### DCP 80386SX-16 MHz with 1 MB RAM

|               |      |      |      |      |      |
|---------------|------|------|------|------|------|
| Basic System  | 729  | 779  | 1009 | 1149 | 1239 |
| w/20 MB Drive | 859  | 899  | 1139 | 1279 | 1379 |
| w/42 MB Drive | 949  | 989  | 1229 | 1359 | 1449 |
| w/80 MB Drive | 1159 | 1199 | 1439 | 1569 | 1669 |

#### DCP 80386-25 MHz with 1 MB RAM

|               |      |      |      |      |      |
|---------------|------|------|------|------|------|
| Basic System  | 1079 | 939  | 1229 | 1359 | 1459 |
| w/20 MB Drive | 1209 | 1069 | 1359 | 1489 | 1589 |
| w/42 MB Drive | 1309 | 1159 | 1459 | 1589 | 1679 |
| w/80 MB Drive | 1519 | 1369 | 1669 | 1799 | 1889 |

#### DCP 80386-33 MHz with 1 MB RAM with 64K Cache

|               |      |      |      |      |      |
|---------------|------|------|------|------|------|
| Basic System  | 1079 | 1119 | 1359 | 1499 | 1589 |
| w/20 MB Drive | 1209 | 1249 | 1489 | 1629 | 1719 |
| w/42 MB Drive | 1309 | 1349 | 1589 | 1719 | 1809 |
| w/80 MB Drive | 1519 | 1559 | 1799 | 1929 | 2029 |

#### DCP 80486-25 MHz with 1 MB RAM and Vertical Case

|                |      |      |      |      |      |
|----------------|------|------|------|------|------|
| Basic System   | 2439 | 2479 | 2769 | 2889 | 2989 |
| w/244 MB Drive | 3069 | 3109 | 3399 | 3529 | 3619 |
| w/320 MB Drive | 3439 | 3499 | 3799 | 3919 | 3999 |
| w/677 MB Drive | 4099 | 4359 | 4369 | 4779 | 4879 |

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# RESOURCES

## Calendar Of Events

### OCTOBER

October 22 Color Studio Part 1 Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 22 HyperCard Scripting Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 22 IBM-SmartWare II Ideas Lecture. Techmart. Infotec Training Institute. Call: (408)562-6272.

October 22 Intro To Hypercard: Beginners Seminar. Berkeley. BMUG. Call: (415)549-2684.

October 22 Microsoft Excel Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

October 22-24 Electronic Messaging '90: Beyond Interpersonal Correspondence Conference. San Francisco. Electronic Mail Association. Call: (703)522-7111.

October 23 Lotus 1-2-3 v3.1 Presentation. San Francisco. San Francisco Business Computers. Call: (415)788-5338.

October 23 PageMaker Seminar. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 23-25 Data Base: A Manager's Guide Seminar. San Francisco. Technology Transfer Institute. Call: (213)394-8305.

October 23-26 Visualization '90 Conference. San Francisco. IEEE. Call: Dr. Stephen Levine, (508)967-0798.

October 23-December 20 Advanced Programming In dBASE III+/IV, Clipper And FoxPro Class. Berkeley. Vista College. Call: (415)841-8431.

October 24 How To Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich and Co., CPA. Call: Beth, (415)864-6770.

October 24 Interchange '90 User Conference. Santa Clara. cc:Mail. Call: 1-800-448-2500.

October 24 Intro To PC DOS Class. Oakland. DataNet. Call: 1-800-879-4181.

October 24 Paradox Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

October 25 Supply And Quality Analysis Of Integrated Circuits Seminar. San Jose. Secrest Research. Call: (415)851-8142.

October 25-November 15 PageMaker 3 Class. San Francisco. San Francisco Community College. Call: (415)267-6500.

October 26 NetWare 286 System Administrator Class. Oakland. DataNet. Call: 1-800-879-4181.

October 26 Quark XPress Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 26 Using MS-DOS Class. San Francisco. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 27 Building A Clone From Scratch Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

October 27 Laptop & Communication Software Technical Forum. San Jose. JDR Microdevices. Call: Dan Urioste, (408)947-8881.

October 27 PC Repair Class. Oakland. DataNet. Call: 1-800-879-4181.

October 30 Accounting And Manufacturing Seminar. Fremont. Call: Victoria, (415)226-0881.

October 30 FileMaker Pro Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 30-November 2 AutoCAD Level I Accelerated Workshop. Santa Clara. The Copper Connection. Call: (408)970-9838.

October 31 dBASE IV Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

October 31-November 2 MacroMind Developer's Conference. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or

222.

October 31-November 2 UNIX Expo. New York. National Expositions Company, Inc. Call: Heidi Dethloff, (312)332-4650.

### NOVEMBER

November 1 Landscape Architecture And Land Planning With AutoCAD Seminar. San Rafael. Marin ACAD User Group. Call: Gigi Bollinger-Himes, (415)491-4722.

November 1 PC Fundamentals Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

November 3 Computer Show & Sale. San Rafael. East-West Computer Shows. Call: (415)388-8893.

November 3 Computer Swap. Santa Clara. Computer Swap. Call: 1-800-433-7469.

November 3 IBM PC Clone Troubleshooting And Repair Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

November 3 What Is A Macintosh And What Can It Do For You Workshop. Sunnyvale. Women's Computer Society. Call: (415)574-8225.

November 5 Intro To NeXT: Beginners Seminar. Berkeley. BMUG. Call: (415)549-2684.

November 5 Intro To WordPerfect Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

November 5 The Basics Of WordPerfect Seminar. Sacramento. Dunn & Bradstreet. Call: (212)312-6880.

November 6 Automating Your Business Accounting System On A Macintosh Seminar. San Francisco. J.C. Lukrich & Co., CPA. Call: Beth, (415)864-6670.

November 6 LAN Use And Abuse With KnowledgeMan Seminar. Walnut Creek. BAKMUG. Call: (415)947-GURU.

November 6 The Basics Of WordPerfect Seminar. Concord. Dunn & Bradstreet. Call: (212)312-6880.

November 6-9 AutoCAD Level II Accelerated Workshop. Santa Clara. The Copper Connection. Call: (408)970-9838.

November 6-9 Real-Time Structured Analysis And Design Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

November 7 Intro To Lotus 1-2-3 Class. Walnut Creek. Computer Education Center.

*continued*

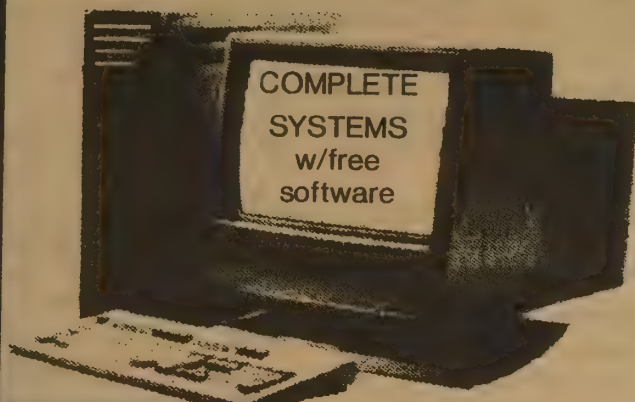
### NOVEMBER 12-16

### COMDEX/ FALL '90

*Las Vegas*

The 12th Annual COMDEX is considered a must for Value-Added Resellers and Dealers, Systems Integrators, Computer Retailers, Original Equipment Manufacturers (OEMs), Distributors, Corporate Volume Resellers and every other type of computer related reseller. This year sessions will address topics such as Portable Computing, Connectivity, Multimedia Computing, and Emerging Computer Markets in Eastern Europe and the Soviet Union. The opening keynote address will be made by Bill Gates, founder and CEO of Microsoft. Contact: CONDEX/Fall Registration Dept., 300 1st Ave., Needham, MA 02194. (617)449-6600.





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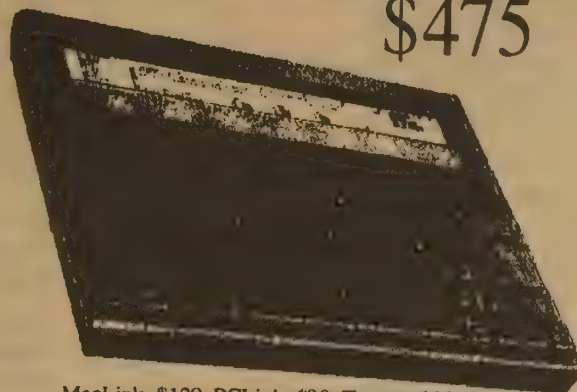
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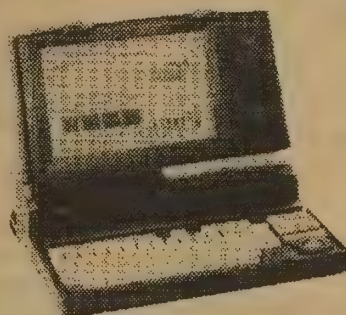
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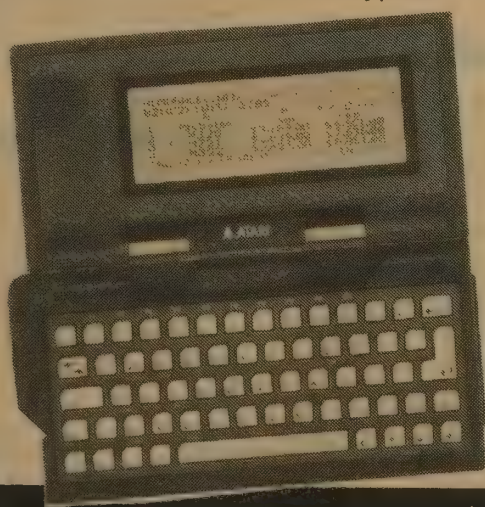
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# RESOURCES

## Calendar Of Events *continued*

Call: (415)937-2566.

**November 7 The Basics Of WordPerfect Seminar.** San Francisco. Dunn & Bradstreet. Call: (212)312-6880.

**November 7-9 Time Line Workshop.** San Francisco. Symantec Software Corp. Call: (415)899-8265.

**November 8 Scalable Computing On A Hypercube Multiprocessor Lecture.** San Francisco. USF. Call: (415)666-6530.

**November 8 The Basics Of WordPerfect Seminar.** San Jose. Dunn & Bradstreet. Call: (212)312-6880.

**November 10 Basics Of Personal Computer Workshop.** Sunnyvale. Women's Computer Society. Call: (415)574-8225.

**November 10 Building A Clone From Scratch Class.** Oakland. Excel Micro Solutions. Call: (415)836-2040.

**November 10 Computer Mart.** Cupertino. De Anza College. Call: (408)864-8581.

**November 10 Computer Show & Sale.** Sacramento. East-West Computer Shows. Call: (415)388-8893.

**November 11 Computer Show.** San Francisco Fort Mason Shows. Call: (916)725-0228.

**November 12 Q & A Workshop.** San Francisco. Symantec Software Corp. Call: (415)899-8265.

**November 13 DOS Essentials Class.** Walnut Creek. Computer Education Center. Call: (415)937-2566.

**November 13-14 AutoLISP II Accelerated Workshop.** Santa Clara. The Copper Connection. Call: (408)970-9838.

**November 13-14 Train The Trainer Course.** San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

**December 15 IBM PC Clone Troubleshooting And Repair Class.** Oakland. Excel Micro Solutions. Call: (415)836-2040.

**November 15 Accounting Systems Seminar.**

Oakland. David A. Simon, CPA. Call: (415)893-5753.

**November 15 Automating Your Business Accounting System On A Macintosh Seminar.** San Francisco. J.C. Lukrich & Co., CPA. Call: Beth, (415)864-6670.

**November 15 Chasing A Promise: 25 Years Of Computers And Instruction Lecture.** San Francisco. USF. Call: (415)666-6530.

**November 15-16 Interactive Multimedia Seminar.** San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

**November 17 Computer Swap.** San Francisco. Computer Swap. Call: 1-800-433-7469.

**November 17 IBM PC Clone Troubleshooting And Repair Class.** Oakland. Excel Micro Solutions. Call: (415)836-2040.

**November 19 The Right Way Of Doing Things, And Doing Things Right Workshop.** Sunnyvale. Women's Computer Society. Call: (415)574-8225.

**November 26 Intro To AutoCAD & DOS Workshop.** Santa Clara. The Copper Connection. Call: (408)970-9838.

**November 26 The Evolving Role Of Women In Technology Workshop.** Sunnyvale. Women's Computer Society. Call: (415)956-7542.

**November 26-January 21 AutoCAD Level II Class.** Santa Clara. The Copper Connection. Call: (408)970-9838.

**November 28-29 On Emerging Software Technologies Conference.** San Francisco. Digital Consulting, Inc. Call: (508)470-3880.

**November 28-30 LANs And Image Communications: Applications for Increasing Productivity Conference And Exposition.** Monterey. BIS CAP International. Call: Kathy Greeley, (617)893-9130.

**November 28-December 20 PageMaker 3 Class.** San Francisco. San Francisco Community College. Call: (415)267-6500.

**December 4-7 Basic AutoCAD, Level 1 Class.** San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

**December 5-7 Time Line Workshop.** San Francisco. Symantec Software Corp. Call: (415)899-8265.

**December 6 Character Animation By Computer: At Its Best (Or Life Beyond Luxo Jr.) Lecture.** San Francisco. USF. Call: (415)666-6530.

**December 6-7 Integration Image & Information Processing Conference.** San Francisco. Digital Consulting, Inc. Call: (508)470-3880.

**December 8 Computer Mart.** Cupertino. De Anza College. Call: (408)864-8581.

**December 8 Computer Swap.** Santa Clara. Computer Swap. Call: 1-800-433-7469.

**December 10 MS-DOS For CAD, Level 2 Class.** San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

**December 10-11 Interactive Multimedia Seminar.** San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

**December 11-14 Optimizing & Customizing AutoCAD, Level 3 Class.** San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

**December 12 Paradox Class.** Walnut Creek. Computer Education Center. Call: (415)937-2566.

**December 13 Q & A Workshop.** San Francisco. Symantec Software Corp. Call: (415)899-8265.

**December 18-21 Hands-on UNIX Systems And Applications Programming In C Course.** San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

**December 20 Accounting Systems Seminar.** Oakland. David A. Simon, CPA. Call: (415)893-5753.

**December 30 Computer Show.** San Francisco Fort Mason Shows. Call: (916)725-0228.

## OCTOBER 31-NOVEMBER 2

### MACROMIND'S FIRST ANNUAL DEVELOPERS CONFERENCE

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MacroMind, a leading vendor of multimedia software, will sponsor its first Developers Conference. The conference will feature panel discussions on current and future multimedia technology, hands-on experience, and an opportunity to meet industry leading developers. Panelists include representatives for Sony, Apple, IBM, Kleiner Perkins Caufield Byers, Intel, Radius, and many others. Contact: MacroMind Developer/Trainer Services, 410 Townsend, Suite 408, San Francisco, CA 94107. (415)442-0200 ext. 222/225, Fax (415)442-0190.

## DECEMBER

**December 1 Computer Swap.** San Francisco. Computer Swap. Call: 1-800-433-7469.

**December 1 IBM PC Clone Troubleshooting And Repair Class.** Oakland. Excel Micro Solutions. Call: (415)836-2040.

**December 3 MS-DOS For CAD, Level 1 Class.** San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

**December 3-5 Eighth Annual SUN User Group Conference And Exhibit.** San Jose. SUN User Group. Call: (415)336-0564.

**December 3-5 Small Business/Home Office Conference: Coordinating Product, Market, and Distribution.** Monterey. BIS CAP International. Call: Kathy Greeley, (617) 893-9130.

**December 4 LAN Use And Abuse With KnowledgeMan Seminar.** Walnut Creek. BAKMUG. Call: (415)947-GURU.

## JANUARY

**January 7 Q & A Workshop.** San Francisco. Symantec Software Corp. Call: (415)899-8265.

**January 8 New Interactive Technologies And Systems Consumer Applications Presentation.** San Francisco. IIS. Call: (408)866-7941.

**January 8-11 LAN Troubleshooting With Hands-on Ethernet Workshop Course.** San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

**January 9-11 Time Line Workshop.** San Francisco. Symantec Software Corp. Call: (415)899-8265.

**January 13 Computer Show.** San Francisco Fort Mason Shows. Call: (916)725-0228.



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- 101-key keyboard
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- ☐ Free DOS 3.41 software
- ☐ Free GEM® Desktop software
- ☐ Free 1 yr on-site service contract

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|                | HDOnly | Mono                                         | EGA   | VGA (640X480) | Super VGA (1024X768) |
| 20MB Hard Disk | \$235  | \$325                                        | \$600 | \$610         | \$705                |
| 40MB Hard Disk | \$285  | \$370                                        | \$650 | \$660         | \$755                |
| 80MB Hard Disk | \$535  | \$620                                        | \$900 | \$910         | \$1005               |



# USER GROUP NETWORK

## BULLETIN BOARDS

209

**BerthaBoard BBS.** (209)239-9853. 8-N-1, 24 hrs., 1200/2400. 350Mb, supporting MS-DOS programming, large echo-mail/file base. [Exp. #76.]

408

**24-Hours-a-Day BBS.** (408)448-1126. 24 hrs., 300/1200/2400. Fido Node #: 1:143/302. 12 Step Programs incl. AA, NA, CA, GA, AI-Anon, etc. Echos: RECOVERY, 12 Step, OASIS, and others. Software: QuickBBS & Frontdoor. Sysop: Mike R. [Exp. #75.]

**24-Hours-a-Day BBS.** (408)448-1126. 24 hrs., 300/1200/2400. Fido Node #: 1:143/302. 12 Step Programs including AA, NA, CA, GA, AI-Anon. Echos: Recovery, 12 Step, OASIS and others. Sysop: Mike R. [Exp. #78.]

**Bay Area Atari Users Group (BAAUG) BBS.** (408)986-0215. 8-N-1, 24 hrs., Sysop: Joe Fischer. [Exp. #75.]

**Chalkboard BBS.** (408)942-1425. Of, by and for public school students. Sysop: Robert Wright. [Exp. #76.]

**CLique BBS.** (408)625-6580. 8-N-1, 24 hrs., 300/1200/2400. Amiga online conf., games, review forum, 120Mb Amiga and Mac, PD software and email. Sysop: Jeff Crichton. [Exp. #76.]

**Computer Classifieds.** (408)253-4280. 300/1200/2400. Commercial and private advertising. Select by category or key words. Sysop: Contemporary Communications, Inc. [Exp. #76.]

**Computer Tyme GAP BBS.** (408)732-0463. 24 hrs., 1200/2400. Alpha alto for GAP BBS. Sysop: Gary Araki. [Exp. #76.]

**Cruzio.** (408)423-9995. 1200/2400. Serve local Santa Cruz County: calendar, directory, conferences, email and USENET newsgroups. Sysop: Chris Neklason. [Exp. #76.]

**Data Port BBS.** (408)259-3019. 1200/2400. Tons of doors, SIGs and IBM files. The theme—fun! Sysop: Ian Robertson. [Exp. #76.]

**DC\_Light BBS.** (408)262-

5150. 8-N-1, 24 hrs., 300/1200/2400. MS-DOS, CAD, UNIX, GIF, WIN; Techie talk and help. 700Mb online. Sysop: Fred Townsend. [Exp. #76.]

**Dirt Alert BBS.** (408)247-3229. 8-N-1, 24 hrs., 300/600/1200/2400. Text only OHV environmental activists BBS for the protection and preservation of Off Highway Vehicle areas. [Exp. #76.]

**First Indigo Board.** (408)459-6710. 8-N-1, 24 hrs., 1200. Brand new. [Exp. #76.]

**Hognet.** (408)732-8958, 248-4736. 8-N-1, 300/1200/2400. Sysop: Alison Denu (Hog-I), Bruce Grembowski (Hog-II). [Exp. #78.]

**Inferno San Jose.** (408)289-1431. 300/1200/2400. 25 lines. multi-chat, D/L libraries, games. [Exp. #76.]

**Midnight Express.** (408)248-2352. 24 hrs., 50 door games, 337Mb, 2 nodes. [Exp. #75.]

**Mountain Retreat BBS.** (408)335-4595. Speciality Turbo Pascal, FidoNet, Pascal Echo. Sysop: John Jamieson. [Exp. #76.]

**Online Computer Bookstore.** (408)744-0514. 8-N-1, 23 hrs., 1200/2400. Large selection of computer books at discount prices, browse free, overnight delivery. Sysop: Austin Murphy. [Exp. #75.]

**P.I.E. (Programming And Interfacing Enthusiasts) BBS.** (408)733-4670. Sysop: Clay Walker. [Exp. #78.]

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415

**& the Temple of the Screaming Electron.** (415)935-5845. Sysop: Jeff Hunter. [Exp. #75.]

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continued on page 228

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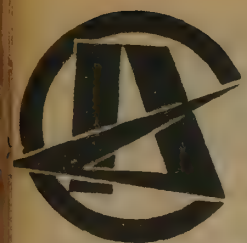
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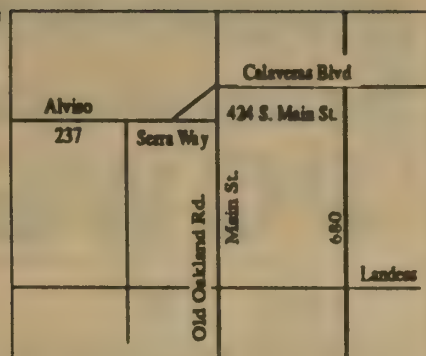


# COMPUTER ART

## COMPUTER ART

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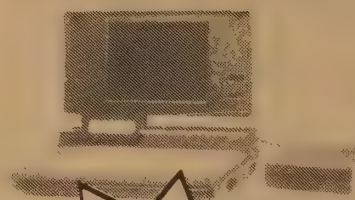
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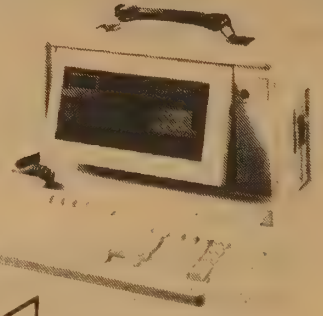
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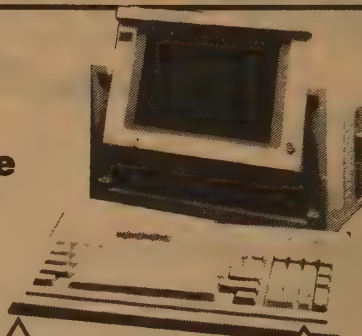
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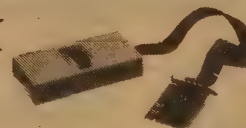
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| Seagate ST-238 Hard Disk (30 MB, 65ms)   | 215  |
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| DFI HS-3000 Scanner       | 175     |
| Scanman Plus              | 189     |
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| Quimax TTL 14" Monitor         | 125  |
| Nanao VGA Multisync 8060S      | 545  |
| Nanao VGA 9070S                | 950  |
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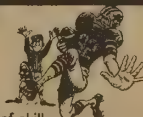


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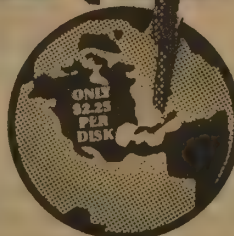
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|--------------|---------|---------|---------|---------|---------|
| MB/Ms        |         |         |         |         |         |
| No Video     | \$849   | \$949   | \$1,149 | \$1,249 | \$1,549 |
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### MICROCOM 386/33C

386/33C System Features, Hard Drive, Monitor & Video Card

| Hard Drives: | 42/32   | 65/32   | 80/18   | 105/18  | 205/18  |
|--------------|---------|---------|---------|---------|---------|
| MB/Ms        |         |         |         |         |         |
| No Video     | \$1,649 | \$1,749 | \$1,949 | \$2,049 | \$2,349 |
| Mono         | \$1,749 | \$1,849 | \$2,049 | \$2,149 | \$2,449 |
| VGA-Mono     | \$1,874 | \$1,974 | \$2,174 | \$2,274 | \$2,574 |
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| Mono         | \$4,649 | \$4,749 | \$5,049 | \$5,799 | \$6,799 |
| VGA-Mono     | \$4,774 | \$4,874 | \$5,174 | \$5,924 | \$6,924 |
| SVGA         | \$4,999 | \$5,099 | \$5,399 | \$6,149 | \$7,149 |
| Hires        | \$5,149 | \$5,249 | \$5,549 | \$6,299 | \$7,299 |

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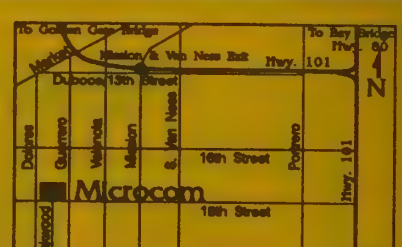
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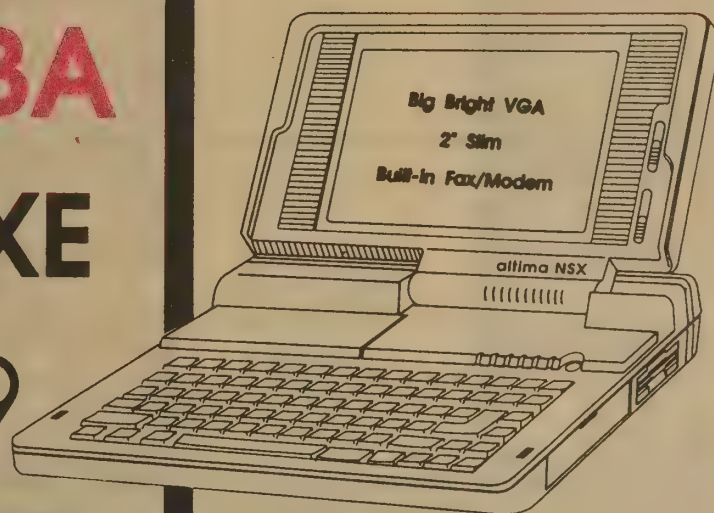
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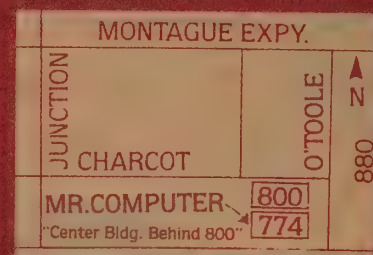
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| SCSI DTC 3280 . . . . .          | 145  |
| Future Domain (OEM) . . . . .    | 138  |
| ESDI DTC 7287 No Cache . . . . . | 149  |
| ULT 12F-8 8K Cache . . . . .     | 169  |
| ULT 12F-32 32K Cache . . . . .   | 189  |

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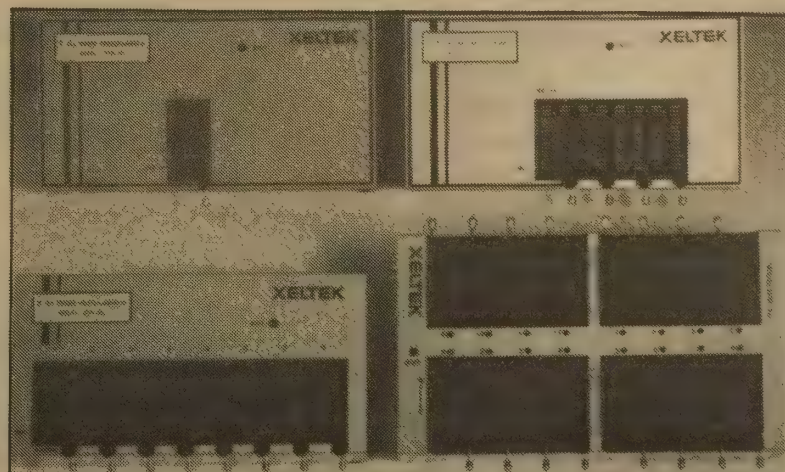
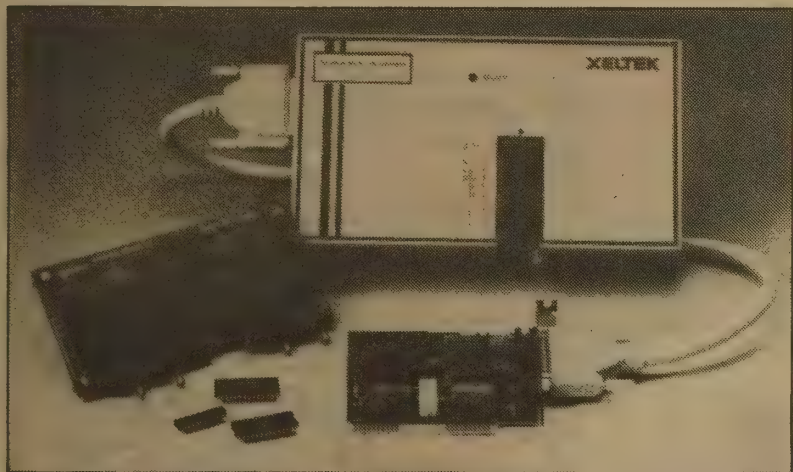
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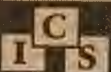
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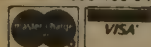
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Continued from page 216

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**Software Entrepreneurs' Forum.** Call: Barbara Cass, (415)854-7219. [Exp. #79.]

**United Sysops Association (U.S.A.).** Meetings: 2nd Wed.,

7:00 pm, call for location. SIG for BBS sysops and users. Call: Bill Strouse, (415)453-3321. [Exp. #75.]

**Women's Computer Society.** Call: Tanya Halepota, (415)949-3936. [Exp. #79.]

**Writer's On-line Association Of Technical Communicators.** Meetings: Weekly, Berkeley. Call: Cynthia Kolnick, (415)673-5819. [Exp. #79.]

# USER GROUPS

## ACCOUNTING

**Accounting East Bay User Group.** Meetings: 4601 Clipper Ct., Fremont. Call: Phrede Deese, (415)657-5880, BBS (415)795-4268. [Exp. #80.]

**Computer Associates User Group.** Meetings: 1st month of quarter on 3rd Wed., Holiday Inn, 1500 Van Ness. Come share ideas and information with other local users of Computer Associates Accounting Software! Call: Beth E. Markus, (415)864-6770. [Exp. #76.]

**On-line Accounting Users Group.** Call: Bob, (415)686-3304. [Exp. #80.]

**San Francisco Bay Area Platinium User Group.** Call: Steve Koss, (415)562-2754, or Jim Britton, (415)576-3209. [Exp. #76.]

## AMIGA

**ALF—Amiga Learners Forum.** Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Call: (408)262-9334. Beginners group. [Exp. #75.]

**Amiga ACCESS (Amiga & Commodore Computer Enthusiasts Society).** Meetings: 2nd Thurs., 7:00 pm, Livermore/Pleasanton. PD libraries. Call: Paul, (415)829-6053. [Exp. #75.]

**ASCITEC: The Amiga Science & Technology Users Group.** Meetings: 2nd Thurs., 5-7 pm, Lockheed, B/157, Rm. 4-C, Sunnyvale. Scientific/Video Applications. Classes available. Call: (408)756-4268. [Exp. #75.]

**AUM—Amiga Users Of Marin.** Meetings: 3rd Wed., 7:30 pm, College of Marin, Science Center, Room 190. Call: Bob Galvan, (415)924-5384. [Exp. #75.]

**Northern California Amiga Club.** Meetings: 2nd Sat., 2:00 pm, Rico's Pizza, 200 Hartnell, Redding. Call: (916)472-3237. [Exp. #76.]

**Valley Computer Club (VCC).** Meetings: 1st Wed., Turlock Jr. High School. C64/C128 Amiga and Commodore MS-DOS users group. Call: (209)529-8473 or 668-8636. [Exp. #76.]

## APL

**APL Bay Area Users Group.** Meetings: 2nd Mon., 7:00 pm, variable. Call: Tibor Horvath,

(415)283-5611. [Exp. #76.]

## APPLE

**ABUG—Apple Blossom User Group.** Meetings: Apple II Group 1st Wed., Mac Group 3rd Wed. Write for info: P.O. Box 53323, San Jose, 95123. Call: (408)395-7900. [Exp. #75]

**Apple II SIG.** Meetings: 4th Thurs., 7:30 pm, Lynbrook High, 1280 Johnson Ave. (W. San Jose). Call: Fred Bernal, (408)258-0284. [Exp. #75.]

**Apple IIGS SIG.** Meetings: 3rd Tues., 7:00 pm, Wilcox High, 3250 Monroe St., Santa Clara. Call: Dave Cone, (415)322-7867. [Exp. #75.]

**Apple SAC—Apple II.** Meetings: 1st Wed. and 3rd Tues. Call: (916)991-7313. [Exp. #76.]

**Appleworks SIG.** Meetings: 4th Tues., 7:00 pm, Wilcox High, 3250 Monroe St., Santa Clara. Call: Egon Jensen, (408)356-2660. [Exp. #75.]

**Gravenstein Apple IIGS User Group.** Meetings: 3rd Sat., 10:00 am, West America Bank, McDowell Ave, Petaluma. Call: (707)763-1428. [Exp. #80.]

**San Francisco State Univ. Apple Core.** Meetings: 2nd Tues., 7:00 pm, Hensill Hall, Rm. 205. An Apple II user group. BBSes, newsletter, demos, mentoring, swaps, DTP and telecom sub groups. Call: (415)771-5830. [Exp. #76.]

## AT&T UNIX

**AT&T Computer User Group—North Bay.** Meetings: 1st Wed., new user education, 6:00 pm, program, 7:00 pm, San Francisco AT&T Bldg., 50 Fremont St. Call: Joe Mahoney, (415)584-6510; BBS (415)829-6027. [Exp. #78.]

**AT&T Computer User Group—South Bay.** Meetings: 3rd Wed., new user education, 6:00 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Joe Lipsig, (408)733-6522; BBS (408)946-7734. [Exp. #78.]

**AT&T UNIX Computer User Group—South Bay.** Meetings: 4th Wed., new user education, 6:30 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Thad Floryan, (408)985-7100; USENET, thad@cup.portal.com. [Exp.

#78.]

**San Leandro Computer Club.** Meetings: 1st Tues., 8:00 pm, San Leandro Community Library. Call: Keith Simmons, (415)887-2008. [Exp. #76.]

## ATARI

**ABACUS (Atari Bay Area Users Society).** Meetings: 1st Sat. Call for place/time, (415)753-8483. [Exp. #75.]

**Bay Area Atari Users Group (BAAUG).** Meetings: 1st Mon., 7:30 pm, Agnews Hospital Auditorium, Palm Rd. and Circle Dr., San Jose. Call: Joe Fischer, (408)988-3065. [Exp. #78.]

**COAST (CA Original Atari ST User Group).** Meetings: 3rd Wed., 6:45 pm, 550 El Embarcadero, Oakland. The 1st Wed special beginners met for members. Call: (415)945-1949. [Exp. #80.]

**San Leandro Computer Club.** Meetings: 1st Tues., 8:00 pm, San Leandro Community Library. Call: Keith Simmons, (415)887-2008. [Exp. #76.]

**South County Atari User Group.** Meetings: 2nd Wed., 7:00 pm, San Jose Computers. Call: C. Ron Reade, (408)225-7162. [Exp. #78.]

## CAD/CAM

**AutoCAD DCA Engineering Software Users Group.** Meetings: 3rd Wed. Call for location. Call: Mike Foley, (415)734-0707. [Exp. #77.]

**Marin ACAD User Group.** Meetings: 1st Thurs. Call: Gigi Bollinger-Himes, (415)491-4722. [Exp. #80.]

**SF Bay Area C.A.S.E. Users Group.** Meetings: Once per quarter. Call: David Plotkin, (415)842-6706. [Exp. #76.]

**Textile Computer Users Group—TCUG.** Meetings: Bi-monthly, 1st Sun., 10:00-noon. Bedford Hotel, San Francisco. Call: (415)284-1635. [Exp. #76.]

## COMMODORE

**Commodore Hayward User Group (C=HUG).** Meetings: 2nd Sat., 2:00 pm, Palma Ceia Park, Hayward. Organized to help all Commodore computer users by providing info and demos. Call:

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**Cupertino Chapter Of 64/More Commodore User Group.** Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Call: (408)262-9334. [Exp. #77.]

**CWEST—Commodore 64/128.** Call: (415)626-9946. BBS, (415)552-9320. [Exp. #80.]

**Fairfield Commodore User Group.** Meeting: 1st and 3rd Mon., 7:30 pm, Solano County Board of Education Bldg., Textat St., Fairfield. Amiga, Commodore 64, 128, PC-40-III. Call: (707)427-6805 or Newsshop BBS (707)446-7235. [Exp. #76.]

**North Valley Chapter Of 64/More Commodore User Group.** Meetings: 2nd Sat., 10:00 am, Milpitas Library. Call: (408)262-9334. [Exp. #76.]

**San Jose Chapter Of 64/More Commodore User Group.** Meetings: 1st Sun., 6:00 pm, Mercury Savings on Blossom Hill. Call: (408)262-9334. [Exp. #76.]

## dBASE

**DataEase User Group.** Meetings: 4th Thurs., 3:30 pm, 101 Montgomery St. Call: (415)945-7817. [Exp. #76.]

**dBASE IV SIG.** Meetings: 1st Tues., 7:00 pm, Ernst & Young,

55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: Fletcher Johnson, (408)283-1333. [Exp. #78.]

**dBASE SIG/SFPCUG.** Meetings: 3rd Mon., 6:15 pm, UCSF, 333 California St., San Francisco. Call: Mark Webster, (415)647-3675. [Exp. #79.]

## DESKTOP PUBLISHING

**Desktop Publishing SIG/SFPCUG.** Meetings: 3rd Tues., 6:00 pm, 660 Market St., Ste. 215, San Francisco. Call: Eric Leong, (415)635-0159. [Exp. #78.]

## EAGLE

**Eagle Computer Users Group.** Meetings: 2nd Sat., 9:00-12 noon, Tandem Computer, 10435 N. Tantau Ave., Cupertino. Call: (408)972-1965. [Exp. #76.]

## EPSON

**Bay Area Epson Salts.** Meetings: 2nd Tues., 7:30 pm, 2611 Broadway, Redwood City. Call: Joe, (415)364-9232, or Tom, (415)992-5475. [Exp. #80.]

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**Contra Costa County Genealogical Society/Computer User Group.** Meetings: 1st Sat. of odd-numbered months. Call: Susan, (415)372-6996. [Exp. #80.]

**Contra Costa PAF User Group.** Meetings: Last Sat., Call: Susan, (415)372-6996 or Julia, (415)933-6555. [Exp. #80.]

**Family Roots Genealogy Program User Group.** Meetings: Jan, March, May, July, Sept, & Nov. For info: Joseph L. Rick, 135 Leslie Dr., San Carlos, CA 94070-3459. Include SASE. [Exp. #75.]

**Genealogy SIG/SFPCUG.** Call: Tom Rubens, (415)255-9516. [Exp. #78.]

## IBM AND COMPATIBLES

**Basic SIG/SFPCUG.** Meetings: 3rd Mon., 7:30 pm, UCSF, 3333 California St., San Francisco. Call: Tom Rubens, (415)255-9516. [Exp. #79.]

**Berkeley PC/Compatible User Group.** Meetings: 2nd Mon., 7:00 pm, Winners Circle, 2618 Telegraph Ave. Call: (415)845-4814 or (415)526-4033. [Exp. #80.]

**C Language SIG/SFPCUG.** Meetings: 2nd Mon. Call: Victor Pribyl, (415)355-8352. [Exp. #79.]

**Columbia SIG/SFPCUG.** Call: Dennis Tye, (415)566-0587. [Exp. #79.]

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**Compatible User Group.** Meetings: 2nd Mon., 7:00 pm, Winners Circle Systems, 2618 Telegraph, Berkeley. Call: Mel Mann, (415)526-4033. [Exp. #80.]

**Desktop Publishing SIG/SFPCUG.** Meetings: 3rd Tues., 6:30 pm, 660 Market St., Ste. 215, San Francisco. Call: (415)391-1333. [Exp. #79.]

**DESQView SIG/SFPCUG.** Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: Jerry Stern, (415)387-2298. [Exp. #79.]

**EastBay FOG.** Meetings: 2nd Wed. All microcomputers, MS-DOS, CP/M. Call: (415)272-9099. [Exp. #80.]

**Games SIG/SFPCUG.** Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: Ron Feiertag, (415)255-9516. [Exp. #79.]

**Investment Software Association, a SIG of San Francisco Business Computers.** Meetings: 4th Tues., 5:30 pm, Donatello Hotel at Post and Mason. Call: (415)788-5388. [Exp. #76.]

**Lotus 1-2-3 SIG/SFPCUG.** Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: (415)282-4100. [Exp. #79.]

**MS Word SIG/SFPCUG.** Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: Vic Saravia, (415)929-1993. [Exp. #79.]

**Napa Valley PC Users Group.** Meetings: 2nd Wed., 7:30 pm, Buck's lower plaza, 10 Chapel Hill Dr. Call: Bob Kulas, (707)255-9241. [Exp. #75.]

**NBUG, North Bay User Group.** Generic computer club for all computer users. SIGs for Mac, IBM, Apple and Commodore, monthly newsletter and p.d. software. Call: (707)644-9327 or 552-0104. [Exp. #79.]

**P.I.E. IBM And Compatibles SIG.** Meetings: 3rd Wed., 7:30 pm, General Disk Corp., 1530 Montague Expwy. Call: Clay Walker, (408)736-7704. [Exp. #75.]

**PC BasicS.** Meetings: 3rd Mon., 7:30 pm, Micro Age Computers, Sunnyvale. SIG of Silicon Valley Computer Society. Call: (415)326-2435. [Exp. #80.]

**PC Clubhouse.** Meetings: 1st Fri., 8:00 pm, CSU, Hayward, Room 202, Meiklejohn Hall. To allow computer users to share knowledge and public domain/shareware software. Call: (415)483-9500. [Exp. #77.]

**Peninsula Computer Club—KayFun.** Meetings: 2nd Thurs., 7:30 pm, Social Room, 222 Laurel St., San Carlos. DOS and CP/M libraries. Call: (415)593-3391 or BBS (415)571-9259. [Exp. #78.]

**Professionals SIG/SFPCUG.** Meetings: 2nd Thurs., 6:15 pm, Call: Kendall Callas, (415)821-1310. [Exp. #78.]

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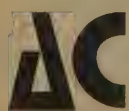
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**San Francisco Computer Society.** Meetings: 1st Mon., 1350 7th Ave., San Francisco. Call: (415)929-0250. [Exp. #75.]

**San Francisco PC Users Group.** Meetings: 3rd Mon., 7:30 pm, UCSF Laurel Heights, 333 California St., San Francisco. Call: (415)221-9166. [Exp. #78.]

**San Lorenzo User Group.** Meetings: 2nd Tues., 7:00 pm, Santa Cruz County. Call: Chuck Schafer, (408)338-7348, BBS (408)335-4672. [Exp. #80.]

**Stanford/Palo Alto Users Group For PCs.** Meetings: Last Wed., 7:30 pm, Stanford Campus, Jordan Quad, Polya Hall, Turing Aud. Call: (415)329-8252. [Exp. #80.]

**Telecommunications SIG/SFPCUG.** Meetings: 3rd Mon., 6:15 pm, UCSF, 333 California St., San Francisco. Call: Tom Rubens, (415)255-9516. [Exp. #79.]

**TRS Nybbilers.** Meetings: 2nd Fri., 8:00 pm, Chabot College, Bldg 1560. MS-DOS, UNIX, OS-9, CP/M. BBS (415)352-8442. Call: Ken Bailey, (415)462-4442. [Exp. #75.]

**WordPerfect SIG/SFPCUG.** Meetings: 3rd Mon., 6:30 pm, UCSF, 3333 California St., San Francisco. Call: (415)821-1310. [Exp. #79.]

## KNOWLEDGE-MAN

**Bay Area KnowledgeMan (And Guru) User Group.** Meetings: 1st Tues., 6:30 pm, JNZ, Inc., Lafayette. A forum for discussion and info. concerning mdbs products, esp. KnowledgeMan and Guru. Call: (415)947-4878. [Exp. #78.]

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## MACINTOSH

**AHUG—Apple Hypercard Users Group.** Meetings: 1st Fri., 7:00 pm, Cupertino. Guest speakers & stack downloading. Call: (408)974-1707 [Exp. #76.]

**Mac SIG DUAAU.** Meetings: 3rd Tues., 7:00 pm, Willow Creek Center, 1026 Mohr Lane, Concord. The perfect place for beginners and old timers. Call: (415)676-9905. [Exp. #80.]

**Macintosh Application Group.** Meetings: TBA. Call: (415)751-9185. Main focus is application support for the user and language programming, all levels. Newsletter is in the making. [Exp. #76.]

**MacSEF.** Meetings: 3rd Tues., 7:00 pm, Call: Tony Meadow, (415)644-9400. [Exp. #79.]

**North Coast Mac Users Group.** Meetings: 3rd Wed., 7:30 pm, Sonoma State University, Darwin Hall, Rm. 108. Not a student organization, annual dues for individuals and businesses. Call: Reed Hopkins, (707)542-1089. [Exp. #76.]

**P.I.E. Macintosh SIG.** Meetings: 2nd Thurs., 7:00 pm, Institute of Computer Technology, 1196 Lime Dr., Sunnyvale. Call: John Alston, (408)735-8247. [Exp. #75.]

**Peninsula Apple/Macintosh Users Group.** Meetings: 3rd Thurs., Ampex cafeteria, Redwood City. Call: Les Dyer, (415)591-2124. [Exp. #76.]

## MULTIMEDIA

**MacroMind Multimedia User Group.** Three active SIGs: Lingo, Production/Design, Video. Call: Ken Durso, (415)442-0200 ext. 202. [Exp. #79.]

**The International Interactive Society—IICS.** Meetings: 2nd Tues., 7:00 pm, UCSF Laurel Heights Conference Center. Call: (415)328-7318. [Exp. #76.]

## MUSIC

**MuSIG.** Meetings: 1st Sun., 2:00 pm. Various locations. Call: (415)858-1493. [Exp. #79.]

## NETWARE

**Central Valley NetWare User Group.** Meetings: To be determined. Call: Rick Utley, (209)825-7063. [Exp. #76.]

## NEURAL NETWORK

**Neural Network User Group.** Call: David (415)644-2369. [Exp. #79.]

## PARADOX

**Paradox SIG/SFPCUG.** Meetings: 3rd Mon., 6:15, UCSF, 333 California St., San Francisco. Call: Richard Haven, (415)549-9109. [Exp. #79.]

**San Francisco Paradox User Group: BAPALS.** Meetings: 4th Tues., 4:00 pm, SF State Downtown Center, 814 Mission St., Suite 206. Call: Brad Jung, (415)287-5833. [Exp. #77]

## PROGRAMMING LANGUAGES

**Smalltalk/V User Group.** Meetings: Last Thurs., 6:30 pm. Call: David Freihofner, (415)362-4283. [Exp. #76.]

**Smalltalk/V SBUG (South Bay User Group).** Meeting: 2nd Thurs., 7:00 pm. Call: Dave O'Neal, (408)929-1969. [Exp. #76.]

## R:BASE

**East Bay R:Base User Group.** Meetings: 4th Thurs., 8:30 am. Call: David, (415)548-4927. [Exp. #76.]

## SALEMAKER

**Bay Area SaleMaker Plus User Group.** Meetings: 3rd Wed., 6:30 pm, various locations. Call: Judy, (415)964-1500. [Exp. #79.]

## SQL

**SQL\_Forum.** Meetings: 1st Thurs., 6:30 pm, 394 Pacific Ave., San Francisco. Discusses client/server computing and SQL database servers. Speakers, demos. Call: (415)695-2748. [Exp. #78.]

**SQL Server User Group.** New, call for information. Call: Patty Sellers at Marathon Systems, (415)362-0500. [Exp. #76.]

## TEXAS INSTRUMENTS

**Texas Instruments Professional Computer Users Group.** Meetings: 4th Thurs., Magnolia Inn, 176 S. Bernardo, Sunnyvale. Call: Thor, (415)386-5237, or Steve, (415)968-9543. [Exp. #77.]

## UNIX/XENIX

**UNIX/XENIX User Group Of N. CA.** Meetings: Call: Ren Just, (707)664-0820 or BBS (707)795-1721. [Exp. #80.]

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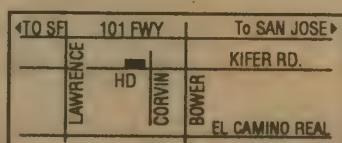
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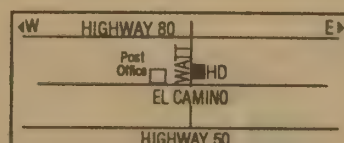
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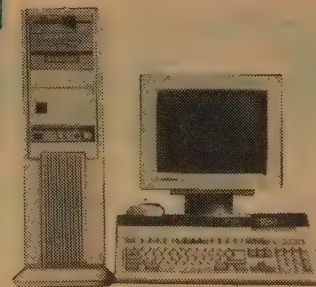
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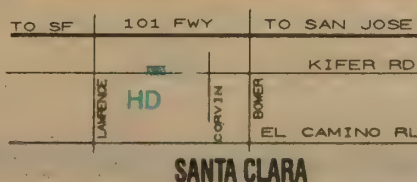
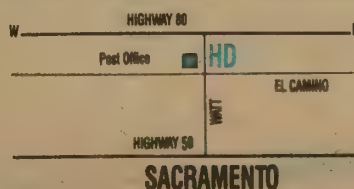
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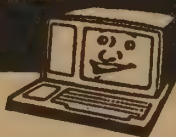
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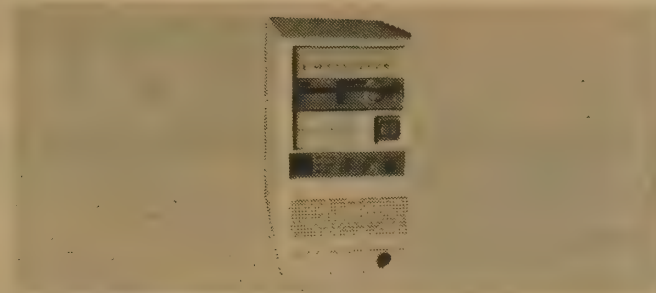
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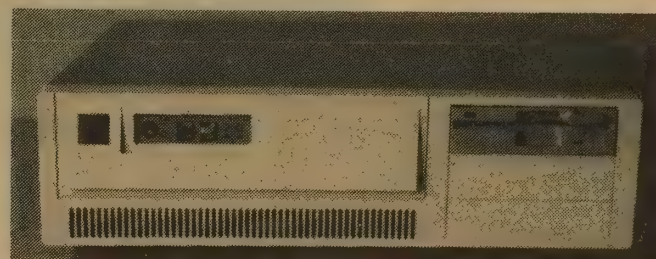
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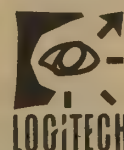
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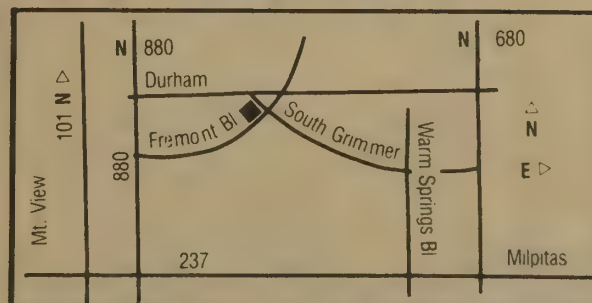
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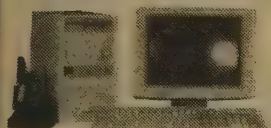
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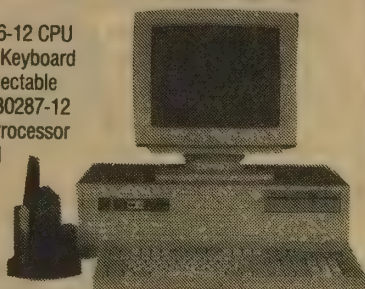
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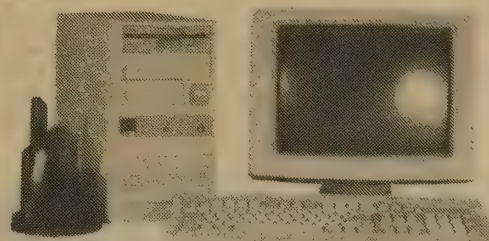
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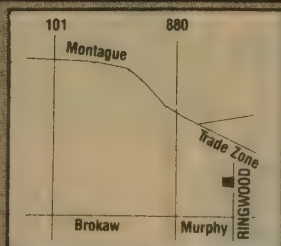
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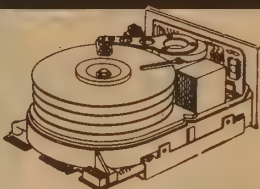
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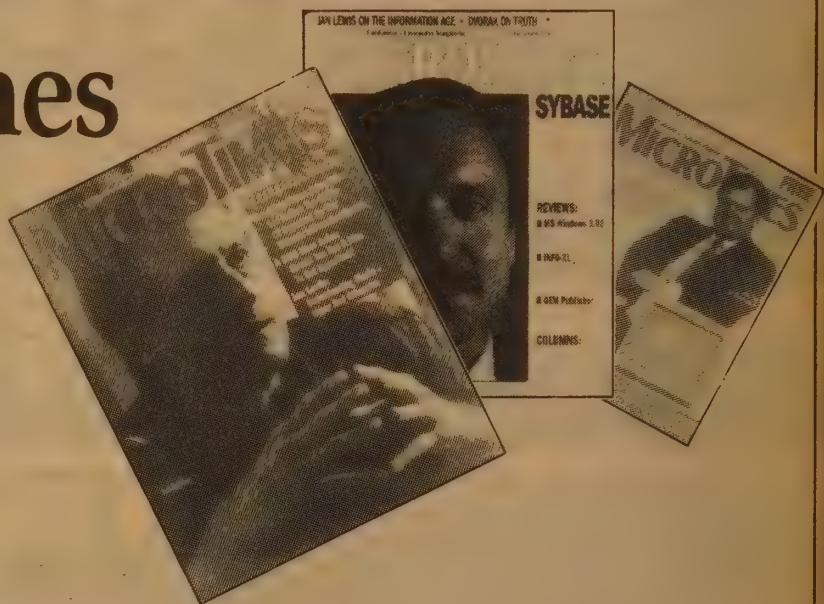
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| CP-3104 104 MB 25ms IDE ..... | \$585 |
| CP-3204 200 MB 25ms IDE ..... | 859   |

### QUANTUM HARD DISKS

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|------------------------------|-------|
| PRO80AT 80 MB 19ms IDE ..... | \$495 |
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### NEC HARD DISKS

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|-----------------------------------------|-------|
| NEC D-3142 65 MB 23ms 3 1/2 RLL .....   | \$315 |
| NEC D-3661 110MB 18ms 3 1/2 ESDI .....  | 629   |
| NEC D-5655 150 MB 18ms 5 1/4 ESDI ..... | 795   |

### SEAGATE HARD DISKS

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| ST-225 20 MB .....        | \$189 |
| ST-251-1 40 MB 28MS ..... | 279   |
| ST-4096 80 MB 28ms .....  | 539   |

### WESTERN DIGITAL

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| 40 MB IDE 28ms w/cont ..... | \$279 |
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### FLOPPY DRIVES

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|--------------------------------------|---------|
| 360K/1.2MB Floppy Drive 5 1/4" ..... | \$60/70 |
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### INTEL MATH CO-PROCESSORS

|                               |       |
|-------------------------------|-------|
| 80287-10 for 286 system ..... | \$225 |
| 387SX-16 .....                | 315   |
| 387DX-20 .....                | 350   |
| 387DX-25 .....                | 440   |
| 387DX-33 .....                | 540   |

### MONITOR OPTIONS

|                                                           |      |
|-----------------------------------------------------------|------|
| Mono Monitor with Card .....                              | \$95 |
| VGA Monitor with 16 bit Card .....                        | 385  |
| Super VGA (1024 x 768) VGA monitor with 16 Bit Card ..... | 469  |

### MONITORS

|                                            |      |
|--------------------------------------------|------|
| 12" Hi-Res Amber monitor .....             | \$70 |
| 14" Hi-Res Flat Screen Amber Monitor ..... | 105  |
| NEC Multisync 2A 800 x 600 .....           | 450  |
| NEC Multisync 3D 1024 x 768 .....          | 625  |
| Sony 1302A 900 x 560 .....                 | 579  |
| Sony 1304 1024 x 768 .....                 | 675  |
| Goldstar EGA Monitor 640 x 350 .....       | 285  |
| Goldstar VGA Monitor 700 x 480 0.39 .....  | 305  |
| Goldstar Monitor 720 x 4000 0.31 .....     | 350  |
| Panasonic C1381 1024 x 768 .....           | 429  |

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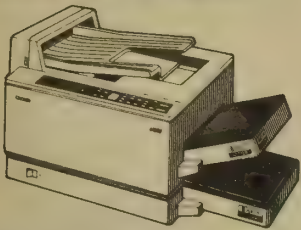
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# Panasonic

Office Automation **OA**

## KX-P4420

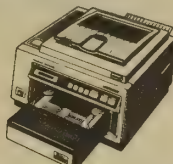


- 8 pages per minute
- 250 sheet capacity
- 300 dpi resolution
- 512K RAM exp. to 4.5MB

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# LASER PARTNER™

## KX-P4455 PostScript



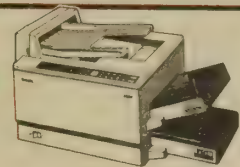
- 2MB RAM exp. to 4MB
- 11 pages per minute
- 500 sheet paper capacity
- 26 internal fonts

**\$2099**



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Office Automation **OA**



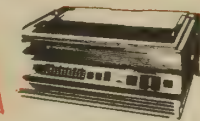
## Laser Partner KXP-4450

- 11 pages per minute
- 300 DPI resolution
- 5 printer emulations
- 512K RAM upgradeable to 1.5MB
- One year limited warranty

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Office Automation **OA**



|                                          |       |
|------------------------------------------|-------|
| KXP 1124 •192 CPS, 80 COL, 24-PIN .....  | \$275 |
| KXP 1180 •192 CPS, 80 COL, 9-PIN .....   | 149   |
| KXP 1191 •240 CPS, 80 COL, 9-PIN .....   | 219   |
| KXP 1524 •240 CPS, 132 COL, 24-PIN ..... | 475   |
| KXP 1624 •192 CPS, 132 COL, 24-PIN ..... | 375   |
| KXP 1695 •330 CPS, 1332 COL, 9-PIN ..... | 429   |
| TWO YEAR LIMITED WARRANTY                |       |

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|                                 |       |
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| Microsoft Mouse w/Windows ..... | \$159 |
| Microsoft Windows 3.0 .....     | 98    |
| Microsoft Word .....            | 199   |
| Microsoft Excel .....           | 250   |
| Lotus 1-2-3 .....               | 475   |
| Quatro 2.0 PRO .....            | 282   |
| WordPerfect 5.1 .....           | 250   |
| WordPerfect Office .....        | 259   |

## SWITCH BOX

|                           |                     |
|---------------------------|---------------------|
| • NO252 AB 25PIN .....    | \$14. <sup>95</sup> |
| • NO254 ABCD 25PIN .....  | 19. <sup>95</sup>   |
| • NO252X AaBb .....       | 21. <sup>95</sup>   |
| • NO362 AB 36PIN .....    | 19. <sup>95</sup>   |
| • NO364 ABCD 36PIN .....  | 21. <sup>95</sup>   |
| • NO362X AaBb 36PIN ..... | 23. <sup>95</sup>   |
| • NO9x4 ABCD 9PIN .....   | 18. <sup>95</sup>   |

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| Omnikey/102 .....       | \$79    |
| Omnikey/Plus .....      | 99      |
| Omnikey/Ultra .....     | 119     |
| Keytronic 101 key ..... | 49      |
| Focus Keyboard .....    | From 59 |

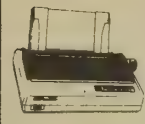
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| M1809 360cps; 75cps NLQ   | \$339 |
| M1909 Wide Carriage ..... | 429   |
| M1824 270cps; 90cps NLQ   | 439   |
| M1924 Wide Carriage ..... | 549   |

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| NX-2415<br>200 cps, 132 col, 24-pin | 449   |
| NX-1000II<br>180 cps, 80 col, 9-pin | 169   |
| NX-1000 R<br>144 cps, 80 col, 9-pin | 219   |

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| • Bus TRACKMAN 320dpi .....    | 89 <sup>95</sup>   |
| • SCANMAN PLUS .....           | 165 <sup>95</sup>  |
| • Paint Show .....             | 14 <sup>95</sup>   |
| • Catchword .....              | 149 <sup>95</sup>  |

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**ASB624-256 ..... 369**

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**ASB24-512 ..... 419**

- Same as ASB624-256 except with 512K memory installed

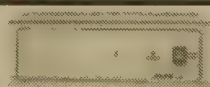
## AUTO SCAN SWITCH, BUFFER CONVERTER

This auto scan switch allows multiple computers to share one printer without the need for manual switching.

|                                                             |       |
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| • MP401 4 computers share one printer (DB25 parallel) ..... | \$108 |
| • MP801 Same as MP401, except using 8 ports .....           | 135   |
| • MS401 4 computers share one serial peripheral .....       | 114   |
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- Overvoltage protection
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| Zoltrix ZX1848A send fax 4800/2400 modem ..... | 145   |
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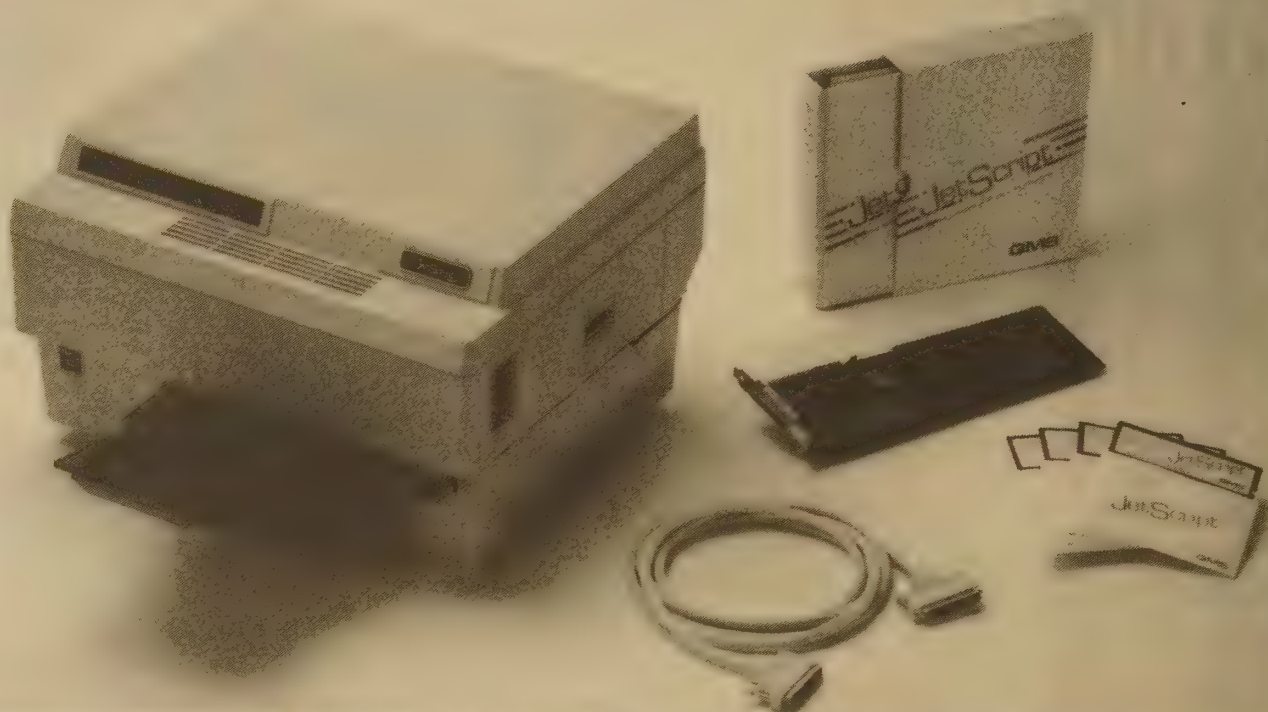


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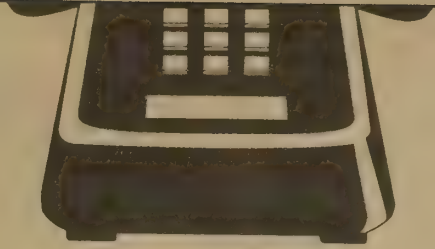
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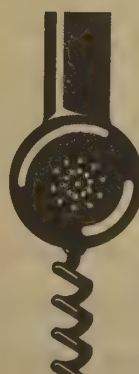
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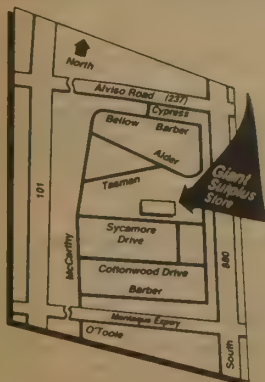
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Continued from page 92

marks. The statements

```
define(a, 1)
define(b, 'a')
```

define "b" in terms of "a" and "b" will change whenever "a" does.

Using quotation marks to suppress the expansion of macro names also makes possible the redefinition of a macro. The sequence

```
define(a, 1)
define(a, 2)
```

will return an error message indicating that the statement "define(1, 2)" contains a bad macro name. The statements

```
define(a, 1)
define('a', 2)
```

initialize "a" to 1 and then change its value to 2.

M4 is unlike most other UNIX utilities in requiring left/right pairing for quotation marks ("). Most UNIX utilities recognize the

same character for left and right quotation marks.

Macros in m4 can be more than simple constants. The macro processor supports arithmetic and logical operators and the built-in macro "eval" can be used to evaluate expressions using these operators. (M4 can perform only integer arithmetic.) Other built-in macros perform basic string manipulations (index, string length, and substring). Consequently, it's possible to build macros that do things in m4.

Macro definitions can also take into account up to ten arguments. A macro to calculate the product of two numbers could be defined as

```
define(product, `eval($1 * $2)` )
```

and invoked with "product(2,34)" or product(a,b) where a and b are macros defined elsewhere to have numeric values. Invoking this macro puts the product of the two arguments in the output stream.

Some of the built-in commands provide higher level functions, such as the ability to include the contents of a file or the output of

an operating system command in m4's output. There are also conditional macros that offer "if-else" capability.

What sets m4 apart from almost everything else in the cat family of programs is that it can be run interactively, reading and copying its input one line at a time instead of waiting for an end-of-file signal.

This makes m4 particularly useful as a front end for other programs. Database users, for example, can use m4 as an intelligent filter for combining ad hoc and canned queries. System administrators can use m4 to simplify things like network administration. (U. Berkeley distributes a system that relies on m4 to manage sendmail configuration files for a network.)

M4 is one of the hidden treats of UNIX. Exactly what it can do is largely obscured by the documentation (which is terse to the point of unsociability) and the lack of simple, useful examples of how to use it. But for the people who take the time to figure out what facilities it makes available, it's a real boon. Asked about m4, one of my co-workers who does network administration said, "M4? It's my life!" ■

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# Return Of REAL PROGRAMMERS

BY JOHN C.  
DVORAK

**N**early ten years ago I decided to collect from my readers a compilation of Real Programmers descriptions. A couple of them were compiled on national networks and a few magazine articles were written listing some classics. Kind of like the light bulb jokes so popular with techno-nerds, the Real Programmer game ended abruptly.

The following listing submitted by readers over the years still holds up, but things have changed. Many programmers are rich and now drive the V-12 BMW 750il to work. Some work on Windows, and that seems to warp them in new and unusual ways. I invite readers to send me [c/o MicroTimes, 5951 Canning St., Oakland, CA 94609; Fax 415/652-4618; UUCP microx@well.sf.ca.us; MCI/MacNET MICROTIMES] ideas for New Real Programmers.

An example of New Real Programmers comes from Cory Johnson: "Real Programmers don't really program anymore; they just cash their checks."

Here's some other ideas from readers around the country. A good

## DVORAK'S LAST COLUMN

list to hang from the cork board in your cubicle.

### NEW REAL PROGRAMMERS

- Real Programmers don't wear suits and ties. And if you see one with a new haircut, sell all your stock in the company he works for—even he's noticed it's going downhill so fast that he's looking for another job.

- Real Programmers drink lots of coffee from styrofoam cups, but haven't bothered to figure out how to use the coffee maker.

- Real Programmers (women) don't like UNIX.

- Real Programmers think that "human factors" is a punk rock group.

- Real Programmers use the word "coffee" as a synonym for food.

- Real Programmers aren't ignoring you; they just don't hear you.

- Real Programmers cringe if you call them authors. A few actually get violent.

- Real Programmers do not ask users to "press any key" or make any other gratuitous decisions.

- Real Programmers have trouble suppressing homicidal tendencies when asked "ARE YOU SURE?"

- Real Programmers hate on-line documentation and prefer reference cards, or better yet, logical flow.

- Real Programmers thought that the word "hack" was a stupid term before it became associated with criminals.

- Real Programmers don't use spreadsheets. They can get the same results faster and more efficiently with BASIC.

- Real Programmers don't eat anything without a dangerously high sugar content.

- Real Programmers don't use lower case. Lower case is for (GOD FORBID) communicating with the real world.

- Real Programmers don't write perfect code. Let's face it; if it weren't for the bugs, programming would be dull.

- Real Programmers don't sleep. Their systems go temporarily down.

- Real Programmers don't use micros. If it weren't for mainframe delays, there wouldn't be time to eat or use the restrooms.

- Real Programmers cannot tell time. In fact, their only concepts of time are "deadline" and "late".

- Real Programmers don't look stylish. To do so would indicate a

belief in society.

- Real Programmers do their best work from 1-5 am.

- Real Programmers strive to insult users with error messages ("invalid code you twit—try again?").

- Real Programmers don't like to fix bugs in code written by someone else.

- Real Programmers adjust user specs to meet their own needs.

•Real Programmers aren't ignoring you; they just don't hear you.

•Real Programmers adjust user specs to meet their own needs.

•Real Programmers strive to insult users with error messages ("invalid code you twit—try again?").

- Real Programmers don't like standards.

- Real Programmers don't like to share computer time with users.

- Real Programmers do not have mid-life crises. Writing code that works is a perpetual crisis.

- Real Programmers must hear at least four rumors a day, else they become anemic and surly.

- Real Programmers think that *War Games* was a documentary film.

- Real Programmers have not written a letter in years. If you do not have a modem, they don't want to talk to you.

- Real Programmers can't remember the name and model of the car that they drive.

- Real Programmers spend two hours balancing their checkbooks on a computer. Using a calculator and pen would require about ten minutes.

- Real Programmers always prefer junk food.

- Real Programmers love to talk "computer-eze" while ordinary citizens are listening.

- Real Programmers don't know anyone who has a secretary.

And let's not forget this classic submitted by Donald Hand:

- Real Programmers believe that the computer has been around since the dawn of man; when Eve traded in her Apple for Adam's Wang! ■

(Thanks to Les Copeland, Kevin Q. Brown, David Keith, Joe Grande, Warren Smith, Craig Patchett and Carolyn S. Dunn for their submissions to this list.)



John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine and MacUser, and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.





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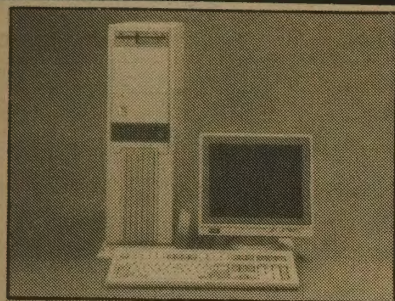


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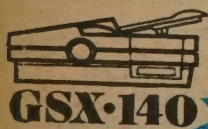


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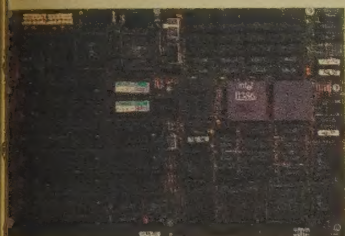
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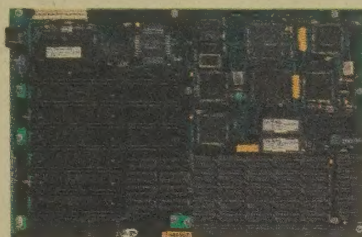
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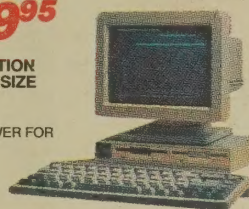
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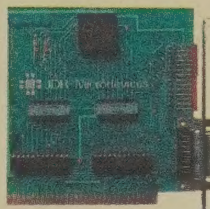
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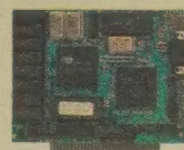
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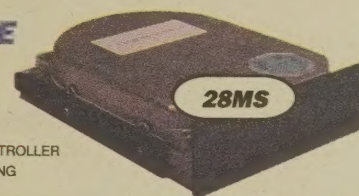
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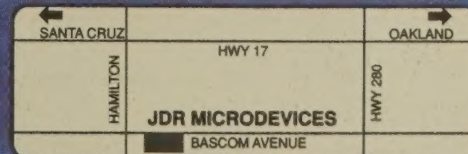
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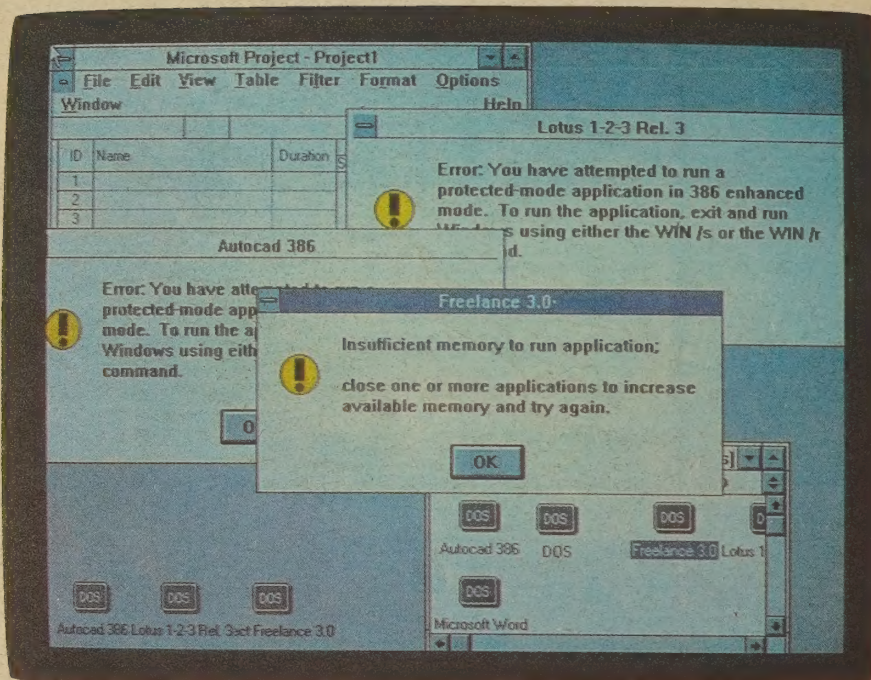
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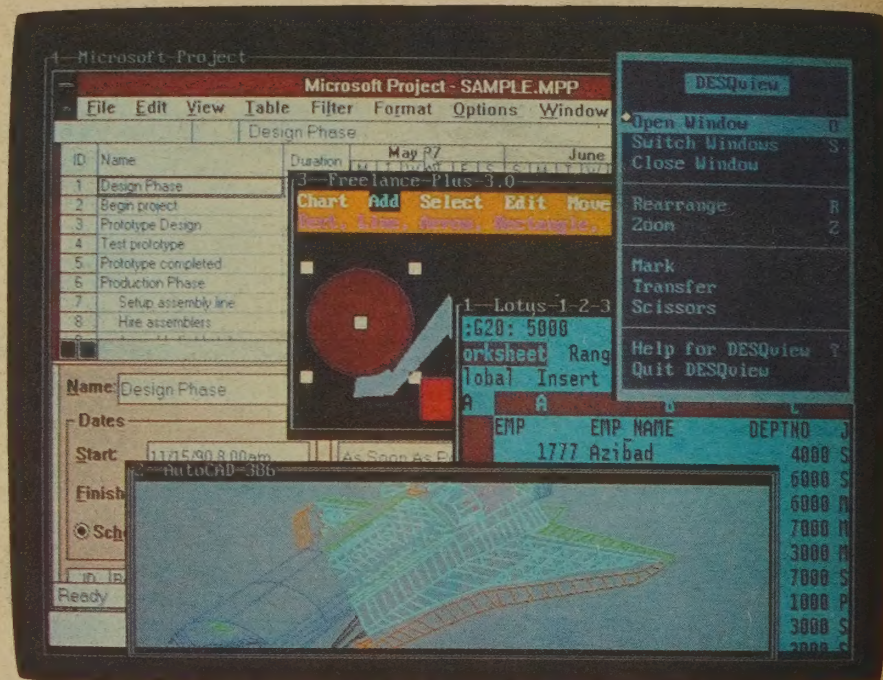


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This comparison was made using a system like the one you might run: Both shots show an ALR FlexCache 33/386 running DOS 3.3 with VGA display adaptor, Novell NetWare v3.01 Rev. A, with IPX/SPX v3.01 Rev A, Microsoft Mouse 7.00, and Microsoft SMARTDrive v3.03 disk cache. Buffers were set to 20. For the Windows screen, we ran Microsoft Windows 3 HIMEM.SYS and EMM386.SYS. For the DESQview screen, we ran QEMM 386 v5.1.

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